Installation, Operation, and Service

3M-Matic™
PS2000 Print and Seal Applicator
Type (T1V1, T1V3)

Serial No. _____
For reference, record machine serial number here.

3M Packaging Systems Division
3M Center, Building 220-8W-01
St. Paul, MN 55144-1000

Printed in U.S.A.

44-0009-1992-6 (C)

To Our Customers:

This is the 3M-Matic™/AccuGlide™/Scotch™ brand equipment you ordered. It has been set up and tested in the factory with "Scotch" brand tapes. If technical assistance or replacement parts are needed, call or Fax the appropriate number listed below.

Technical Assistance

3M-Matic™ Helpline – 1-800/328 1390. Please provide the customer support coordinator with the machine number, machine type/model and serial number. If you have a technical question that does not require an immediate response, you may Fax it to 651/736 7282.

Replacement Parts

Order parts by part number, part description and quantity required. Also include machine name, number and type. A parts order form is provided at the end of Section 8, Illustrated Parts Breakdown.

3M/Tape Dispenser Parts
241 Venture Drive
Amery, WI 54001-1325

1-800/344 9883
FAX# 715/268 8153

Minimum billing on parts orders will be $25.00. Replacement part prices available on request.

$10.00 restocking charge per invoice on returned parts.

Note: Outside the U.S., contact the local 3M subsidiary for parts ordering information.

3M

3M Packaging Systems Division

3M Center, Building 220-8W-01
St. Paul, MN 55144-1000

Copyright

3M Center, St. Paul, MN 55144-1000

Software

Any enclosed software resident in machine is owned by Licensor or its suppliers and is licensed for use only on a single machine in the user's Trade or Business. User agrees not to, and not to authorize or permit any other person or party to, duplicate or copy the enclosed software. In no event will Licensor or its suppliers be liable for any damages or loss, including direct, incidental, economic, special, or consequential damages, arising out of the use or inability to use the software.

Trademarks

3M and the 3M logo, 3M-Matic, and Scotch are trademarks of 3M. All other product names mentioned herein are the trademarks of their respective owners.

Disclaimer

This publication is provided "as is" without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. 3M may make improvements and/or changes in the product(s) and/or program(s) described in this publication at any time.

Table of Contents

Section 1. Safety 1-1

1.1 Intended Use 1-1
1.2 Safety and Information Labels 1-2
1.3 General Safety Information 1-5
1.4 Safe Use of Machine 1-5
1.5 Number of Operators Required 1-5
1.6 Operator Skill Level Required 1-6
1.7 Machine Hazards 1-7
1.8 Operator Actions Not Allowed 1-7

Section 2. Introduction 2-1

2.1 Description 2-1
2.2 Basic Applicator System 2-1
2.3 Additional Components Required for Complete Applicator System 2-2
2.4 Manuals 2-4

Section 3. Specifications 3-1

3.1 PS2000 Applicator 3-1
3.2 Operating Rate 3-2
3.3 Applicator Dimensions 3-5
3.4 Programmable Controller 3-6

Section 4. Unpacking 4-1

4.1 Unpacking PS2000 Applicator 4-1
4.2 Inspection 4-1

Section 5. Installation 5-1

5.1 Tools Required for Installation and Troubleshooting 5-1
5.2 PS2000 Applicator Installation 5-1
5.2.1 Install Print Engine 5-2
5.2.2 Connect Case Sealer to Applicator 5-3
5.2.3 Reposition Light Pedestal 5-3
5.2.4 Complete Applicator Installation 5-3

Section 6. Operation 6-1

6.1 Applicator Controls and Indicators 6-2
6.2 Theory of Operation 6-3
6.3 Load and Thread Printer Ribbon 6-4
6.4 Load and Thread Printable Tape 6-5
6.5 Ready Applicator for Printing 6-6
6.6 Position Printed Label on Box 6-6
6.6.1 Generic Label 6-6
6.6.2 Box Length Label 6-7
6.7 Checkout Inspection 6-8
6.7.1 Static Tests 6-8
6.7.2 Programmable Controller Start-up Conditions 6-9
6.7.3 Programmable Controller Inputs and Outputs 6-10
6.7.4 Dynamic Tests 6-12

Table of Contents

Section 7. Maintenance and Troubleshooting 7-1
7.1 Maintenance 7-1
7.1.1 Tools 7-1
7.1.2 Cleaning 7-1
7.1.3 Lubrication 7-2
7.1.4 Adjustments 7-3
7.1.4.1 Pre-Strip Roller Edge Guide Adjustment 7-3
7.1.4.2 Tape Tracking Adjustment 7-3
7.1.4.3 Dancer Adjustment 7-4
7.1.5 Mechanical Device Factory Set Points 7-5
7.1.5.1 Pre-Strip Vane 7-5
7.1.5.2 Pre-Strip Roller Tension 7-6
7.1.6 Electrical Device Factory Set Points 7-7
7.1.6.1 Tape Out Sensor 7-7
7.1.6.2 Low Tape Sensor 7-8
7.1.6.3 Festoon Depleted Proximity Sensor 7-8
7.2 Troubleshooting 7-9
7.2.1 General 7-9
7.2.2 Troubleshooting Guide 7-9
7.2.3 Electrical System 7-11
7.2.3.1 Electrical Diagram 7-11
7.2.3.2 Sensor Locations 7-15
7.2.3.3 Fuses and Circuit Breakers 7-16
7.2.3.4 Electrical Circuit Fault Conditions 7-17

Section 8. Illustrated Parts Breakdown 8-1
8.1 How to Order Replacement Parts 8-1
8.2 Recommended Spare Parts 8-1
8.3 Figures and Page Numbers 8-2

Appendix A. PLC Addendum A-1
A.1 MicroLogix 1000 Programmable Controller Description A-1
A.2 Documentation A-1
A.3 MicroLogix 1000 Specifications A-2
A.4 PLC Programming A-3
A.5 PLC Troubleshooting A-3
A.6 Ladder Logic A-6
A.7 Address/Symbol Database A-19
A.8 Integer Data File N7 ..... A-22

Product Use: User is responsible for determining whether the product is fit for a particular purpose and suitable for user's method of application.

Warranty and Limited Remedy: THE FOLLOWING WARRANTIES ARE MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, A CUSTOM OR USAGE OF TRADE: 3M warrants its tapes and thermal transfer ribbons will be free from defects in materials and manufacture. If a tape or thermal transfer ribbon is proved to be defective, then the exclusive remedy and 3M's sole obligation shall be, at 3M's option, to replace the quantity of the tape or thermal transfer ribbon which is proved to be defective or to refund the purchase price.

Equipment Warranty and Limited Remedy: THE FOLLOWING WARRANTIES ARE MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, A CUSTOM OR USAGE OF TRADE:

3M sells its **3M-Matic™ PS2000 Print and Seal Applicator** with the following warranties:

1. The motors, springs and rollers will be free from all defects for ninety (90) days after delivery.
2. All other parts will be free from all defects for two (2) years after delivery.
3. The print engine will be covered by a warranty issued by the manufacturer of the print engine. Further details will be provided upon request.

If any 3M-warranteed part is proved to be defective within its warranty period, then the exclusive remedy and 3M's and seller's sole obligation shall be, at 3M's option, to repair or replace the part, provided the defective part is returned immediately to 3M's factory or an authorized service station designated by 3M. A part will be presumed to have become defective after its warranty period unless the part is received or 3M is notified of the problem no later than five (5) calendar days after the warranty period. If 3M is unable to repair or replace the part within a reasonable time, then 3M, at its option, will replace the equipment or refund the purchase price. 3M shall have no obligation to provide or pay for the labor required to install the repaired or replacement part. 3M shall have no obligation to repair or replace: (1) those parts failing due to operation misuse, carelessness or due to any accidental cause other than equipment failure, or (2) parts failing due to non-lubrication, inadequate cleaning, improper operating environment, improper utilities or operator error.

Limitation of Liability: 3M and seller shall not be liable for direct, indirect, special, incidental or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability or any other legal theory.

The foregoing Warranty and Limited Remedy and Limitation of Liability may be changed only by a written agreement signed by authorized officers of 3M and seller.

This page intentionally left blank.

1 Safety

1.1 Intended Use

The 3M-Matic™ PS2000 Print and Seal Applicator is intended to be used for printing computer-generated labels and artwork on Scotch™ Printable Tape. The PS2000 applicator is installed on a 3M-Matic 120af/120af3, 200a, 700a, 700aks, 800a/800a3, or 800af/800af3 case sealer which seals the top flaps of a regular-slotted container with the printed tape supplied by the PS2000 applicator. The applicator has been designed and tested for use with #3340 Scotch™ Printable Tape. Using any other tape may lead to poor performance and/or unsafe operating conditions. The applicator must be installed and used in a clean, dry environment.

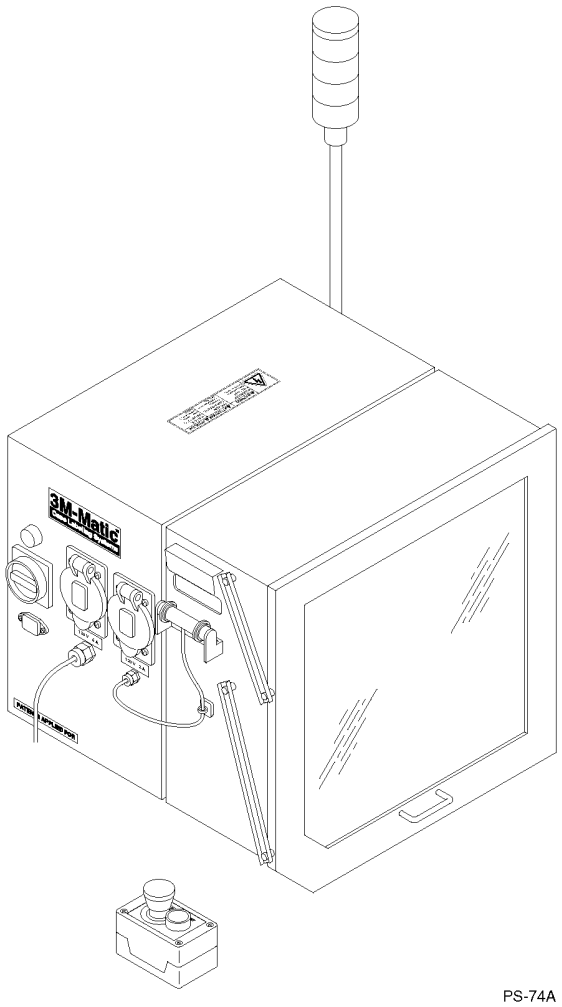


Figure 1-1. 3M-Matic™ PS2000 Print and Seal Applicator (Left-Hand Applicator Shown)

1.2 Safety and Information Labels

Any safety or information labels that are scratched or peeled off, painted over, or otherwise destroyed must be replaced promptly to ensure operator safety.

✓ Note

Replacement part numbers for labels are shown in Figures 1-2 through 1-4.

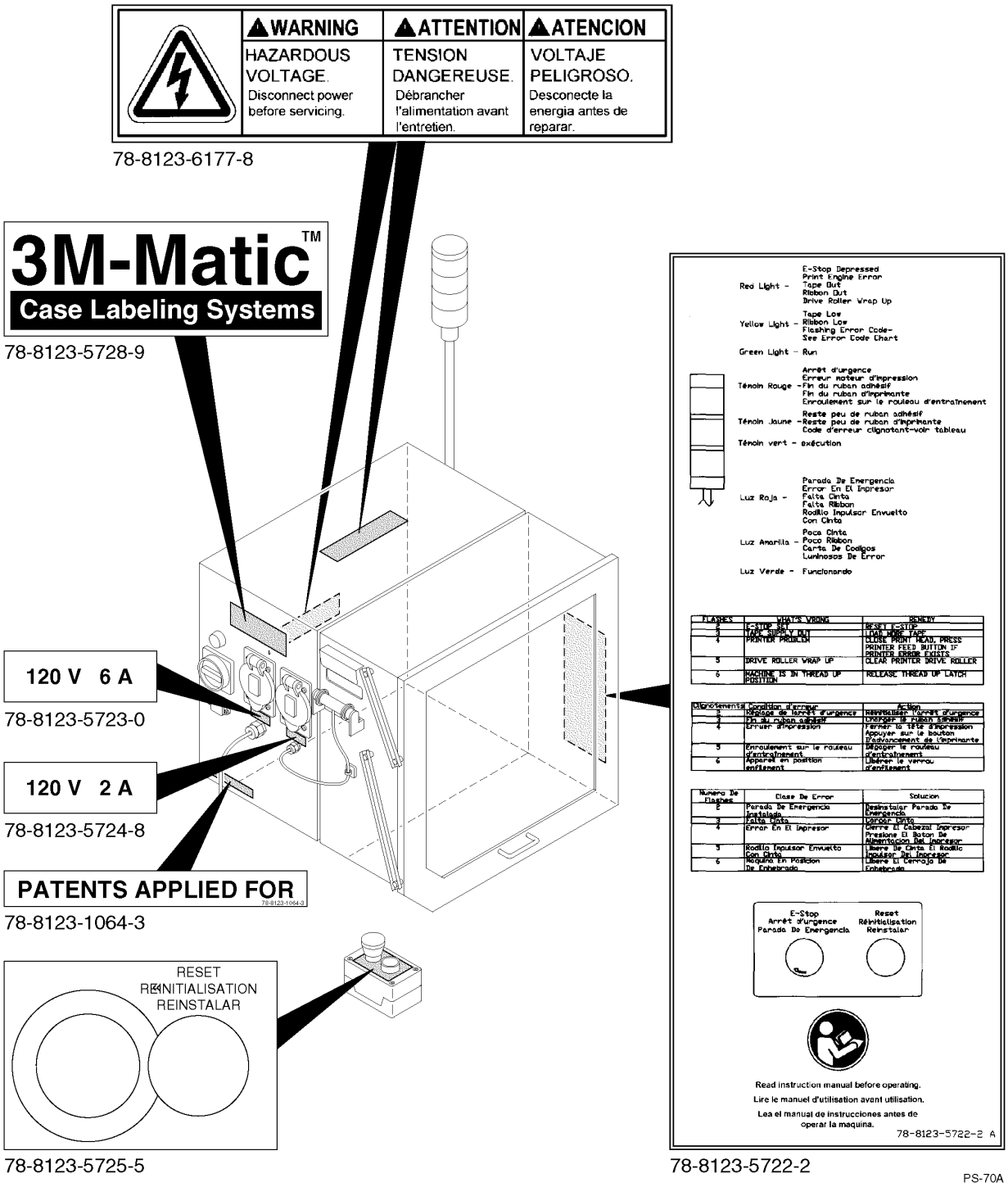


Figure 1-2. Replacement Labels/3M Part Numbers (Left-Hand Applicator Shown)

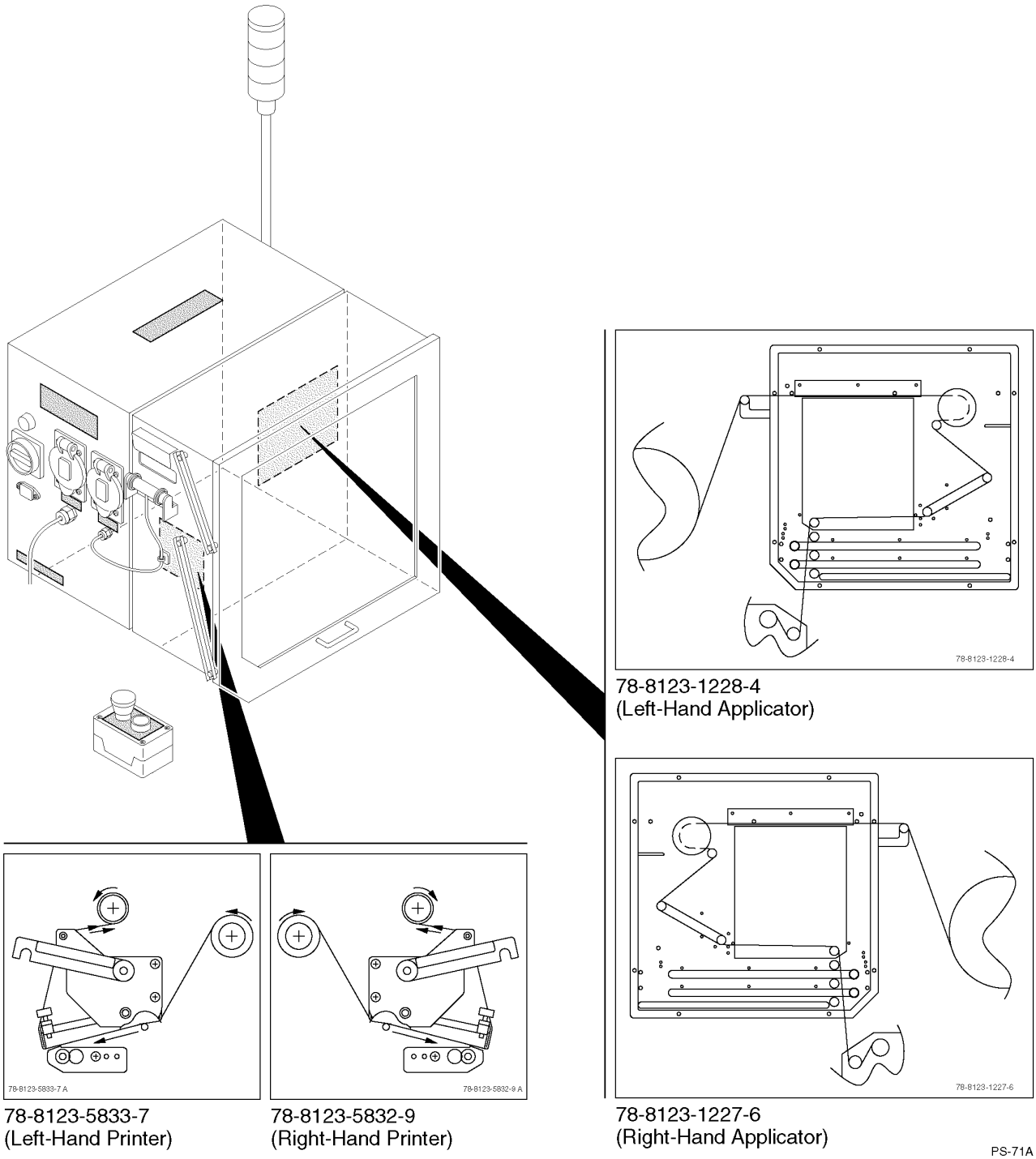


Figure 1-3. Replacement Labels/3M Part Numbers (Left-Hand Applicator Shown)

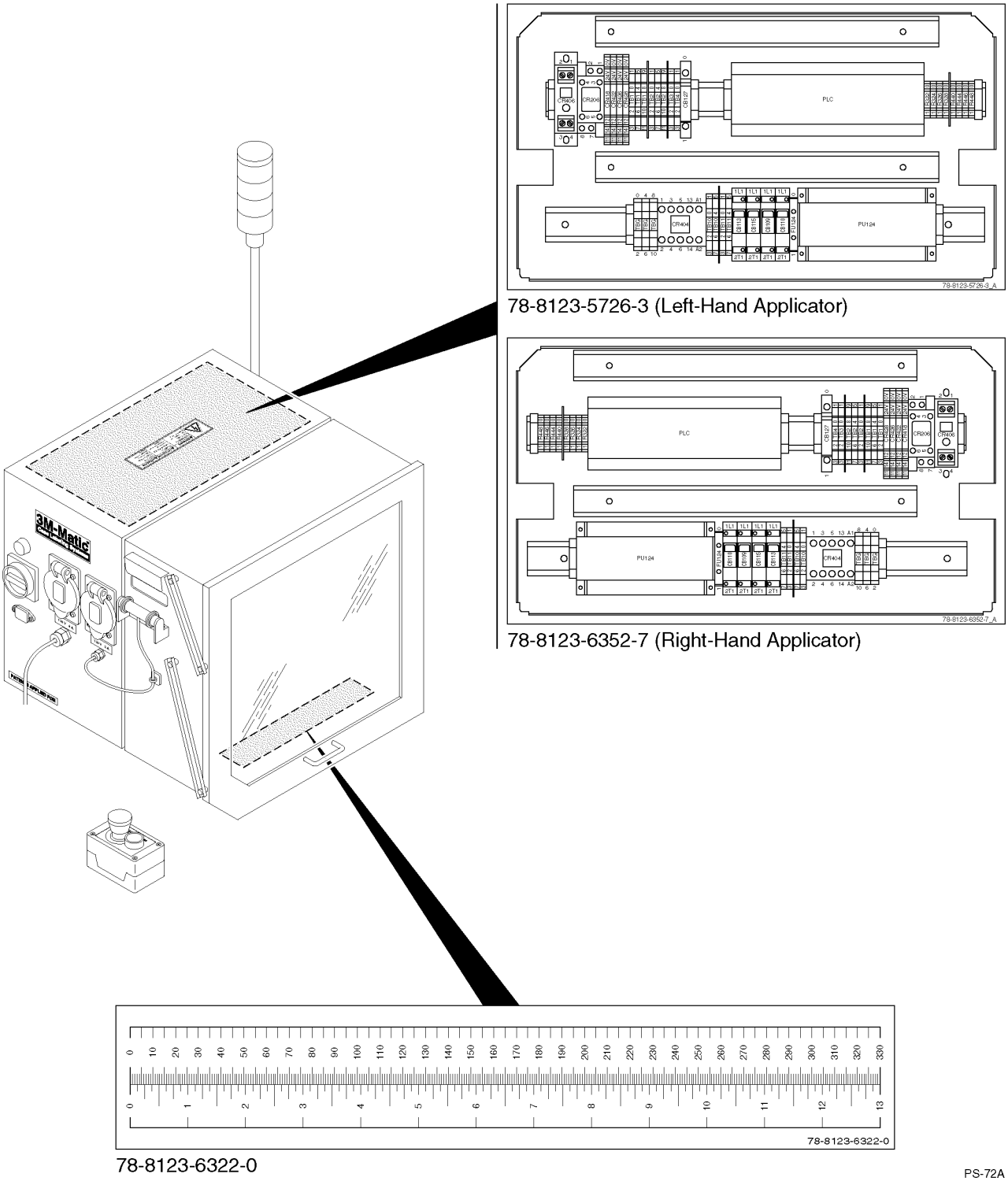


Figure 1-4. Replacement Labels/3M Part Numbers (Left-Hand Applicator Shown)

1.3 General Safety Information

⚠ This safety alert symbol identifies important messages in this manual. READ AND UNDERSTAND THEM BEFORE INSTALLING OR OPERATING THIS EQUIPMENT.

The PS2000 applicator has a latching emergency stop (E-stop) pushbutton switch shown in Figure 1-5. This switch is mounted, with a Reset button, in a location near the front of the applicator that is readily accessible to the operator.

For 200a, 700a, 700aks, and 800a/800a3 case sealers, the existing E-stop switch is relocated to the side of the applicator.

When the applicator's E-stop switch is pressed, both the applicator and the case sealer stop immediately at any point in the working cycle. When the case sealer's E-stop switch is pressed, only the case sealer stops (the applicator does not stop). To unlatch either E-stop switch, turn the switch knob clockwise.

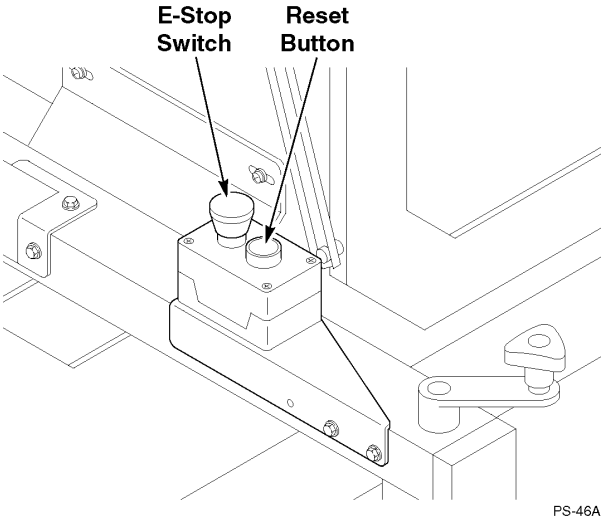


Figure 1-5. E-Stop Switch and Reset Button

1.4 Safe Use of Machine

Only people that have the skills described below should be allowed to operate, adjust, or repair the PS2000 applicator. It is the responsibility of management to appoint operators with appropriate training and skill for each category of job.

SKILL LEVEL 1
MACHINE OPERATOR
A machine operator is trained in all aspects of machine operation including safety and adjustments.

SKILL LEVEL 2
ELECTROMECHANICAL TECHNICIAN
This technician is trained in both electrical and mechanical repair and maintenance including work on live electrical components within electrical enclosures. The manufacturer recognizes this technician as having received product-specific training.

SKILL LEVEL 3
CERTIFIED DISTRIBUTOR TECHNICIAN
This technician is a skilled specialist sent by the distributor to perform complex repairs to the machine. The manufacturer recognizes this technician as having received product-specific training.

SKILL LEVEL 4
COMPUTER SPECIALIST
A person with product-specific training, expertise, and knowledge of the associated computer interface and programs.

1.5 Number of Operators Required

In general, it is recommended that two people unpack, install, set up, and check out the PS2000 applicator. After installation, only one operator is required for safe operation of the machine. A greater number of operators could lead to unsafe operating conditions and is not recommended.

1.6 Operator Skill Level Required

The following table shows the minimum operator skill level required for each operation with the PS2000 applicator.

Operation	State of PS2000 Applicator	Operator/Technician Skill Level	Number of Operators
Initial machine set up and training	Electric supply turned ON or OFF	3	2
Running boxes through case sealer	Electric supply turned ON	1	1
Tape loading and threading	Electric supply turned ON	1	1
Printer ribbon loading and threading	Electric supply turned ON	1	1
Minor case sealer adjustments for box width and height	E-stop pressed on PS2000 applicator	1	1
Creating labels and downloading them to applicator	Electric supply turned ON	4	1
Applicator troubleshooting	Electric supply turned ON or OFF	2	N/A
Applicator repair	Electric supply turned OFF	2	N/A
Major problem diagnosis	Electric supply turned ON or OFF	3	N/A

1.7 Machine Hazards

The PS2000 applicator is designed and engineered to be as safe as possible. During its normal operation, with the applicator door closed, there is virtually no hazard to the operator.

However, the case sealer has some hazards that exist and cannot be eliminated.

In general, the operator should be aware of the following hazards associated with the case sealer:

- **Tape Cut-off Knife**
  Use care when threading tape, replacing the cut-off knife, or working around the knife.
- **Drive Belts**
  Keep hands/fingers and loose clothing away from box drive belts on the case sealer whenever the belts are running. The belts could pull hands or loose clothing into the machine and cause severe injury.

✓ Note

Read the warning labels on the case sealer and refer to the Safety section of the *Installation and Parts List* manual supplied with the case sealer.

1.8 Operator Actions Not Allowed

- Do not operate the applicator with the front door open.
- Do not allow an untrained person (without the proper skill level) to operate or service the applicator.
- Do not use solvents for general machine cleaning; use a mild detergent and dry the machine thoroughly.
- Do not modify any part of the machine.

This page intentionally left blank.

2 Introduction

2.1 Description

The 3M-Matic™ PS2000 Print and Seal Applicator is designed to print computer-generated labels and artwork on Scotch™ Printable Tape. The applicator is used in conjunction with a 3M-Matic™ Case Sealer. Equipped with a high-quality print engine, the applicator is ideally suited for printing bar codes as well as company logos, product identification numbers, etc. The label is printed on-demand by the PS2000 applicator and then applied to the top flaps of a regular-slotted container by the case sealer.

Label information (format and content) is created on a host computer using label creation software and then downloaded to the applicator. Alternatively, the applicator can be networked with the host computer for downloading of labels. See Figure 2-1.

PS2000 applicators are available in the following four models:

- Right-hand, painted
- Right-hand, stainless steel
- Left-hand, painted
- Left-hand, stainless steel

Facing the infeed end of a case sealer, a right-hand applicator would have its front access door located on the right side, and a left-hand applicator would have its front access door located on the left side.

2.2 Basic Applicator System

The following items are included with a 3M-Matic™ PS2000 Print and Seal Applicator:

Quantity	Description
1	PS2000 Print and Seal Applicator (Right or Left-hand, painted or stainless steel)
1	*Installation, Operation, and Service* Manual
1	*Printer Operation* Manual

Also see Section 2.3, Additional Components Required for Complete Applicator System.

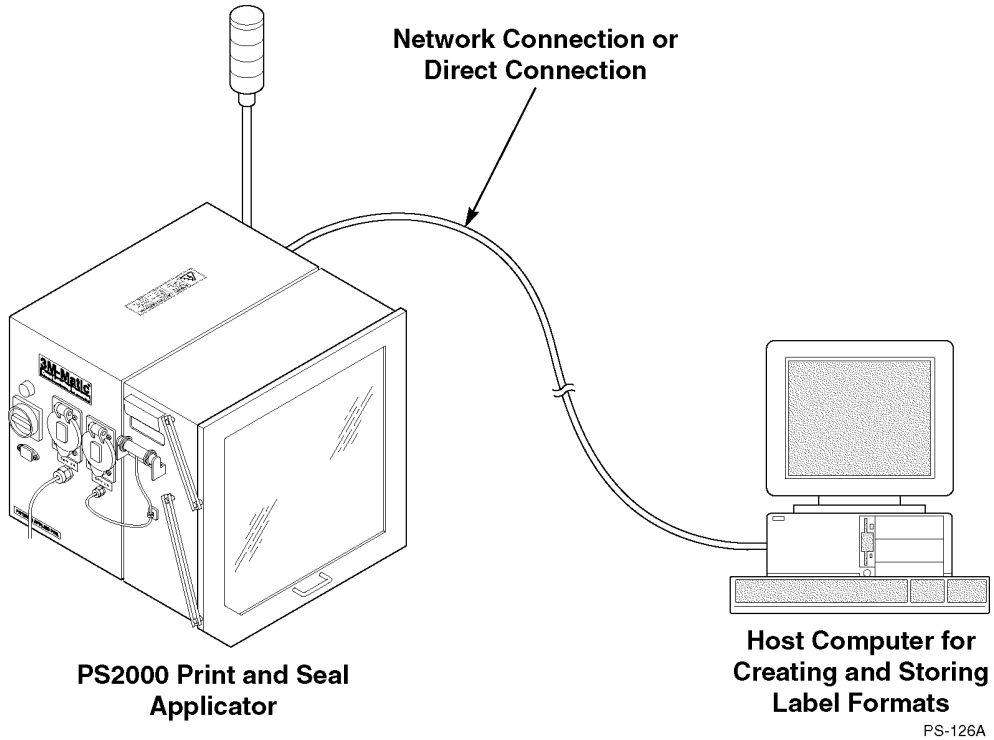


Figure 2-1. PS2000 Applicator and Host Computer (Left-Hand Applicator Shown)

2.3 Additional Components Required for Complete Applicator System

✓ Note

The additional components required for a complete PS2000 applicator system must be purchased separately.

A complete **PS2000R (Right-Hand)** Print and Seal Applicator system requires the additional components and supplies listed in Table 2-1.

Table 2-1. Additional Components for Right-Hand Applicator

Quantity	Item	Description	3M Part Number
1	Right-Hand Print Engine	PE42 Datamax Print Engine Type 19900, or PE43 Datamax Print Engine Type 19900	78-8117-3046-0 78-8117-3048-6
1	Right-Hand Case Sealer (operator controls on right side of machine when facing infeed end)	120af Case Sealer Type 19600, or 120af3 Case Sealer Type 19600, or 200a Case Sealer Type 39600, or 700a Case Sealer Type 39600, or 700aks Case Sealer Type 19300, or 700aks Case Sealer Type 29800, or 800a Case Sealer Type 39600, or 800a3 Case Sealer Type 39600, or 800af Case Sealer Type 39600, or 800af3 Case Sealer Type 39600	78-8095-4839-5 78-8114-0824-0 78-8095-4833-8 78-8095-4834-6 78-8079-5572-5 78-8114-0812-5 78-8114-0814-1 78-8114-0815-8 78-8114-0817-4 78-8114-0818-2
1	Installation Kit	120af/120af3 Installation Kit, or 200a/800a/800a3 Installation Kit, or 700a Installation Kit, or 700aks Installation Kit, or 800af/800af3 Installation Kit	78-8117-3603-8 78-8117-3612-9 78-8117-3604-6 78-8117-3609-5 78-8117-3608-7
A/R	Printable Tape	#3340 Scotch™ Printable Tape (2-in x 1000 yd), or (3-in x 1000 yd)	 70-0062-7352-1 70-0062-7367-9
A/R	Printer Ribbon	#5860-A Scotch™ Thermal Transfer Ribbon (53 mm x 455 m), or (80 mm x 455 m) #5860-B Scotch™ Thermal Transfer Ribbon (53 mm x 455 m), or (80 mm x 455 m)	 70-0062-7495-8 70-0062-7388-5 70-0062-7460-2 70-0062-6458-6
1	Computer	Host computer, interface cable (parallel standard), and label creation software	

A complete **PS2000L (Left-Hand)** Print and Seal Applicator system requires the additional components and supplies listed in Table 2-2.

Table 2-2. Additional Components for Left-Hand Applicator

Quantity	Item	Description	3M Part Number
1	Left-Hand Print Engine	PE42 Datamax Print Engine Type 19900, or PE43 Datamax Print Engine Type 19900	78-8117-3047-8 78-8117-3049-4
1	Left-Hand Case Sealer (operator controls on left side of machine when facing infeed end)	120af Case Sealer Type 19600, or 120af3 Case Sealer Type 19600, or 200a Case Sealer Type 39600, or 700a Case Sealer Type 39600, or 700aks Case Sealer Type 19300, or 700aks Case Sealer Type 29800, or 800a Case Sealer Type 39600, or 800a3 Case Sealer Type 39600, or 800af Case Sealer Type 39600, or 800af3 Case Sealer Type 39600	78-8095-4839-5 78-8114-0824-0 78-8095-4833-8 78-8095-4834-6 78-8079-5572-5 78-8114-0812-5 78-8114-0814-1 78-8114-0815-8 78-8114-0817-4 78-8114-0818-2
1	Installation Kit	120af/120af3 Installation Kit, or 200a/800a/800a3 Installation Kit, or 700a Installation Kit, or 700aks Installation Kit, or 800af/800af3 Installation Kit	78-8117-3603-8 78-8117-3612-9 78-8117-3604-6 78-8117-3609-5 78-8117-3608-7
A/R	Printable Tape	#3340 Scotch™ Printable Tape (2-in x 1000 yd), or (3-in x 1000 yd)	 70-0062-7352-1 70-0062-7367-9
A/R	Printer Ribbon	#5860-A Scotch™ Thermal Transfer Ribbon (53 mm x 455 m), or (80 mm x 455 m) #5860-B Scotch™ Thermal Transfer Ribbon (53 mm x 455 m), or (80 mm x 455 m)	 70-0062-7495-8 70-0062-7388-5 70-0062-7460-2 70-0062-6458-6
1	Computer	Host computer, interface cable (parallel standard), and label creation software	

2.4 Manuals

The *Installation, Operation, and Service* manual and the *Printer Operation* manual are provided with the PS2000 applicator. The information in these manuals is intended to enable the equipment to be well maintained and operated safely.

Ensure that the manuals are available to all operators of the applicator and that the manuals are updated with any subsequent revisions. Also, keep the manuals near the machine for reference by service and/or maintenance personnel.

Keep the manuals in a clean, dry place near the applicator. If they are lost or damaged, new manuals are available through 3M/Tape Dispenser Parts at 1-800-344-9883.

Finally, if the applicator is sold or disposed of, please include the manuals with the machine.

3 Specifications

3.1 PS2000 Applicator

Table 3-1 lists specifications for the 3M-Matic™ PS2000 Print and Seal Applicator.

Table 3-1. PS2000 Applicator Specifications

Item	Description
Power Requirements	Electrical: 100 – 120 VAC, 12 A 200 – 240 VAC, 6 A (requires modification) Power line voltage surges may cause loss of printer data and operator intervention may be required. Follow the printer operation procedures to reload print job data. If this problem persists, contact the technical assistance center.
Operating Rate	See Figures 3-1 through 3-6.
Operating Conditions	Temperature: 13°C to 38°C [55°F to 100°F] with clean, dry boxes Relative Humidity: 10% to 90% (non-condensing) Light: No direct sunlight
Applicator Weight	Packaged for shipping: 58 kg [127 lb] Unpacked: 43 kg [95 lb] without printer 55 kg [122 lb] with printer
Label Application Leg Lengths	70 mm [2.75 in] leading and trailing legs
Print Engine	Datamax PE42, maximum printed label length is 762 mm [30 in] Datamax PE43, maximum printed label length is 762 mm [30 in]
Printable Tape	3340 Scotch™ Printable Tape 330 mm [13 in] maximum diameter on a 76 mm [3 in] core
Printer Ribbon	5860-B Scotch™ Thermal Transfer Ribbon
3M-Matic™ Case Sealers	PS2000 applicator is designed for use on 120af/120af3, 200a, 700a, 700aks, 800a/800a3, and 800af/800af3 case sealers.
Product Boxes	Board and Style: RSC (regular-slotted containers), 125 to 275 psi bursting test, single or double wall B or C flute Box length: 762 mm [30 in] maximum 152 mm [6 in] minimum Box width: Refer to case sealer specifications Box height: Refer to case sealer specifications
Airborne Noise Emissions	Airborne noise emissions from the applicator were measured according to European Union directive 98/37/EC, Annex 1, paragraph 1.7.4(f), using an ExTech no. 407735 sound level meter in a room having a background ambient noise level of 45 dBA. For this test, a 3M-Matic case sealer was used in combination with the tested unit. Maximum feeding position sound pressure was found to be 84.5 dBA (83.5 dBC peak) during operation, and average surrounding sound pressure was 83.9 dBA (84.1 dBC peak).

3.2 Operating Rate

Figures 3-1 through 3-6 show the relationship between the number of boxes sealed per minute and the box length. A 254 mm [10 in] printed label length is assumed.

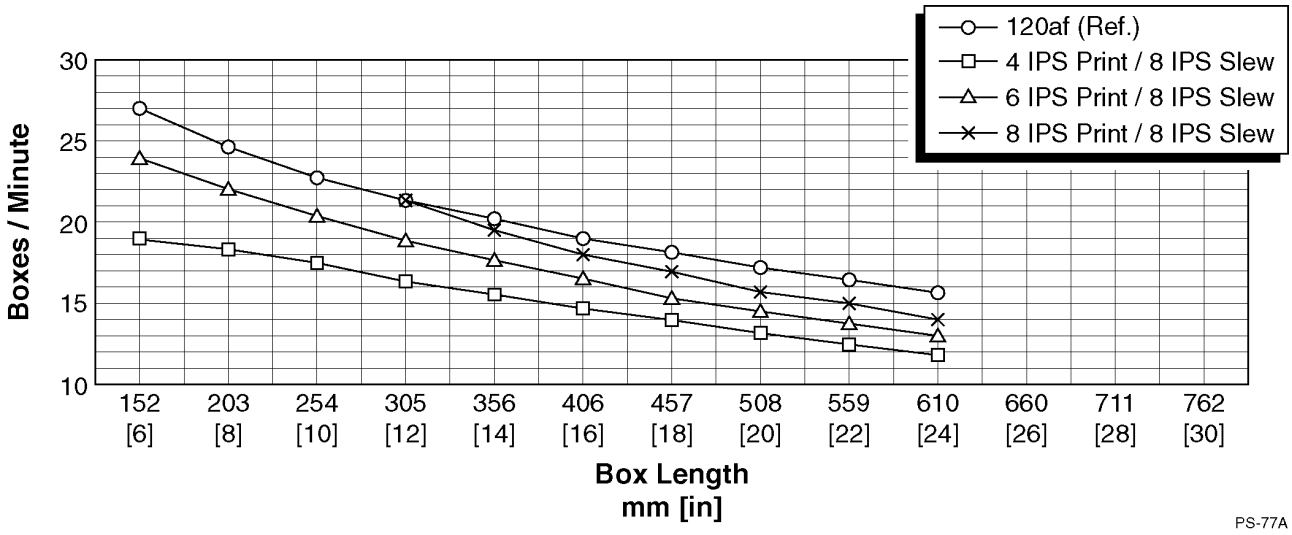


Figure 3-1. Operating Rate for PS2000 Applicator on 120af/120af3 Case Sealers

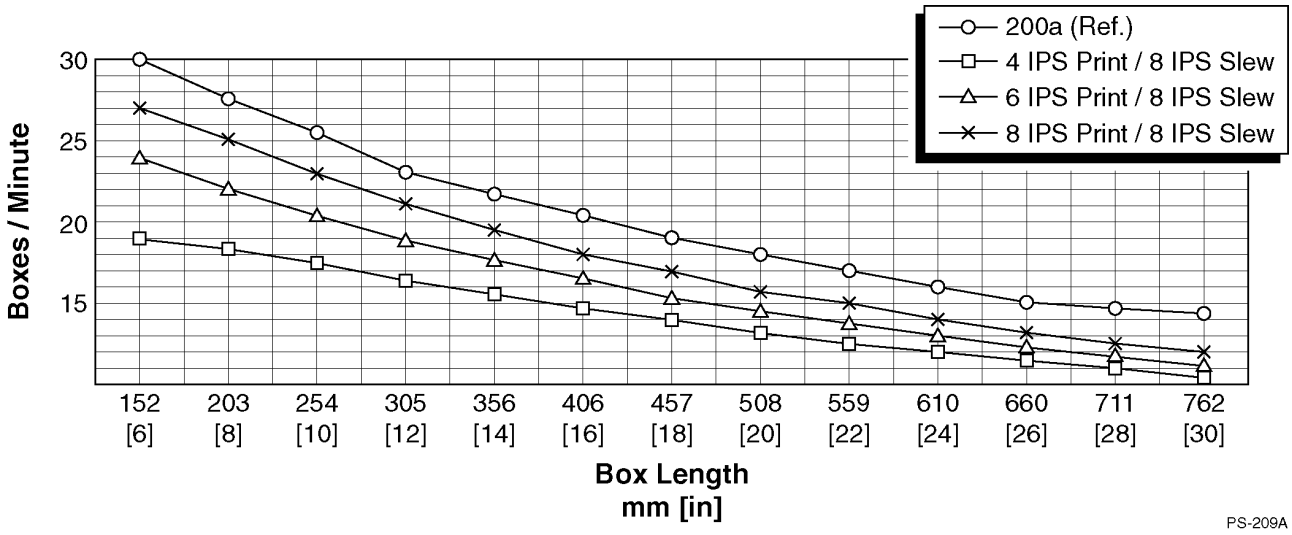


Figure 3-2. Operating Rate for PS2000 Applicator on 200a Case Sealers

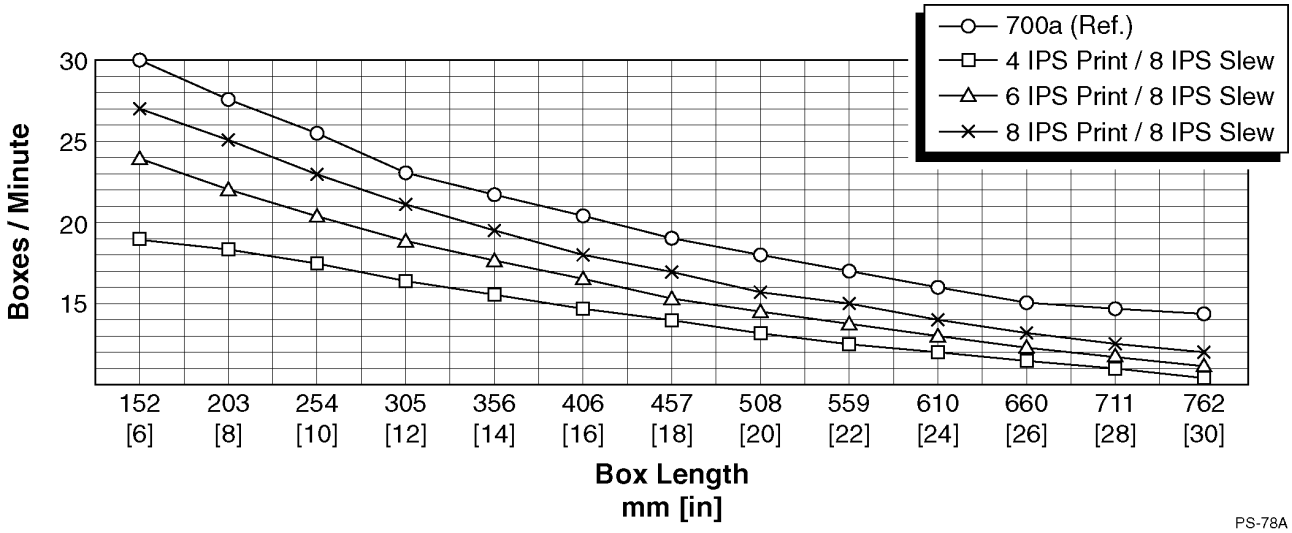


Figure 3-3. Operating Rate for PS2000 Applicator on 700a Case Sealers

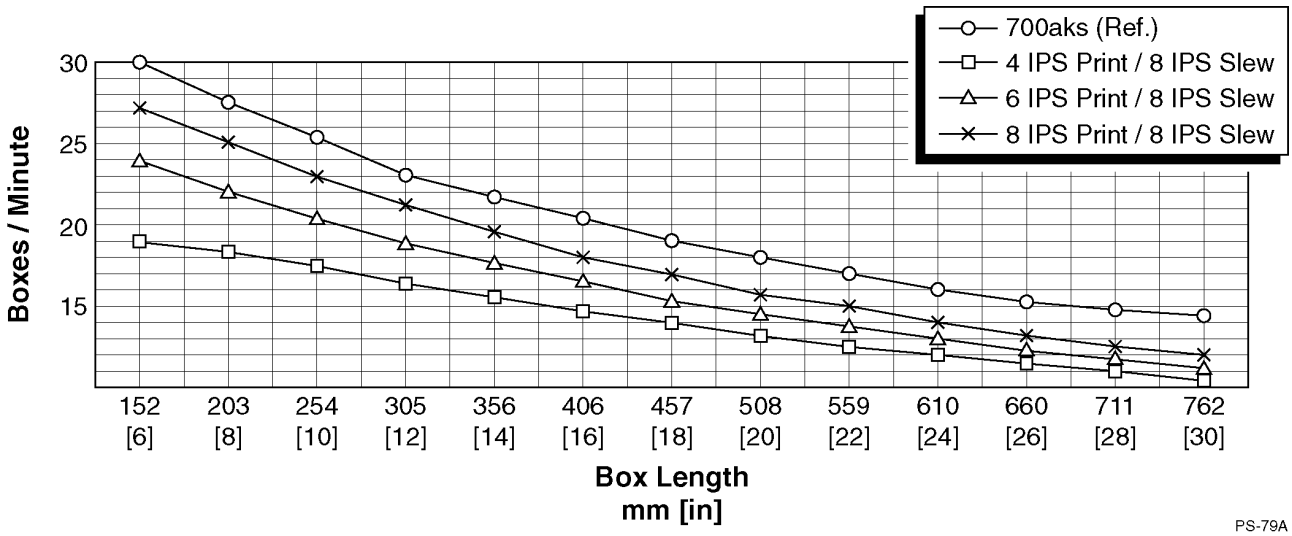


Figure 3-4. Operating Rate for PS2000 Applicator on 700aks Case Sealers

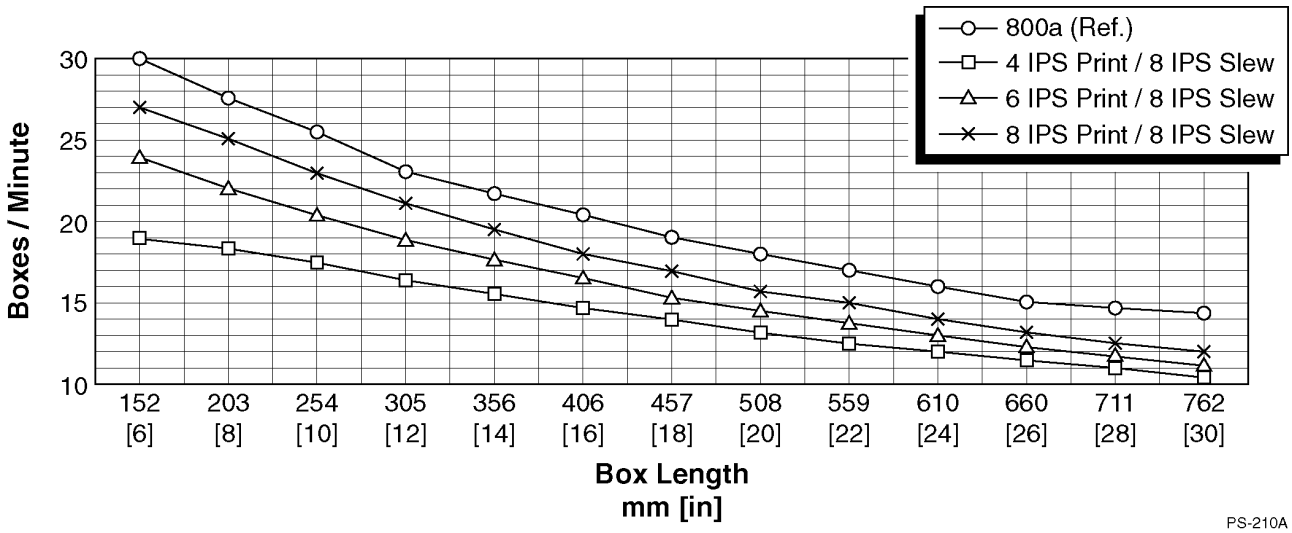


Figure 3-5. Operating Rate for PS2000 Applicator on 800a/800a3 Case Sealers

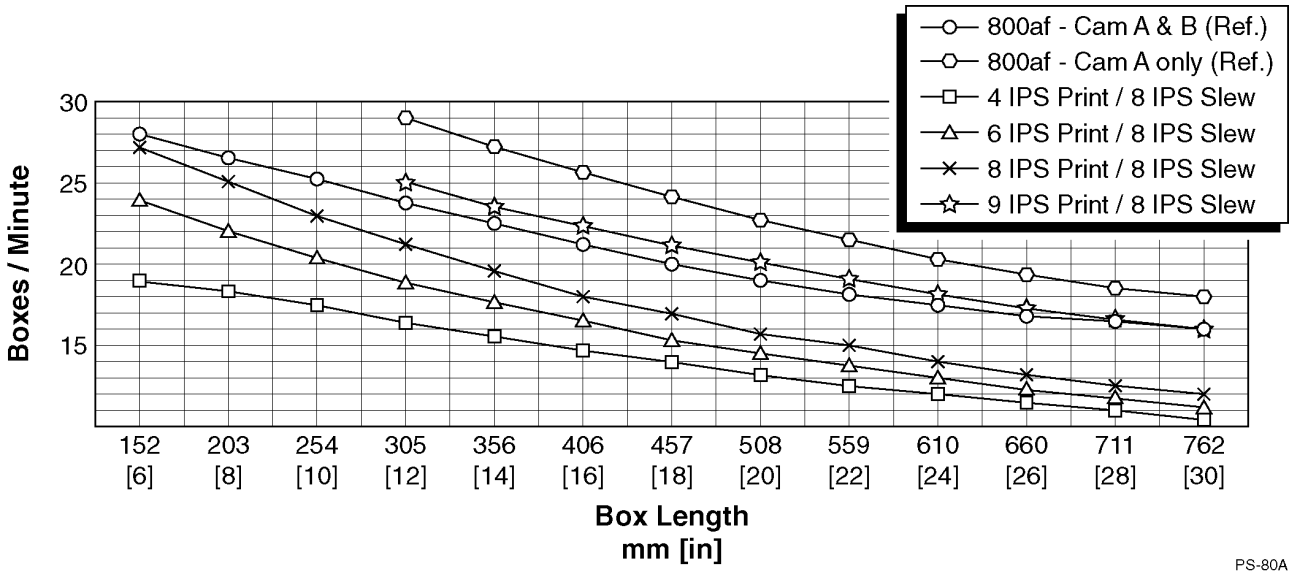


Figure 3-6. Operating Rate for PS2000 Applicator on 800af/800af3 Case Sealers

3.3 Applicator Dimensions

Figure 3-7 shows the dimensions of the PS2000 applicator.

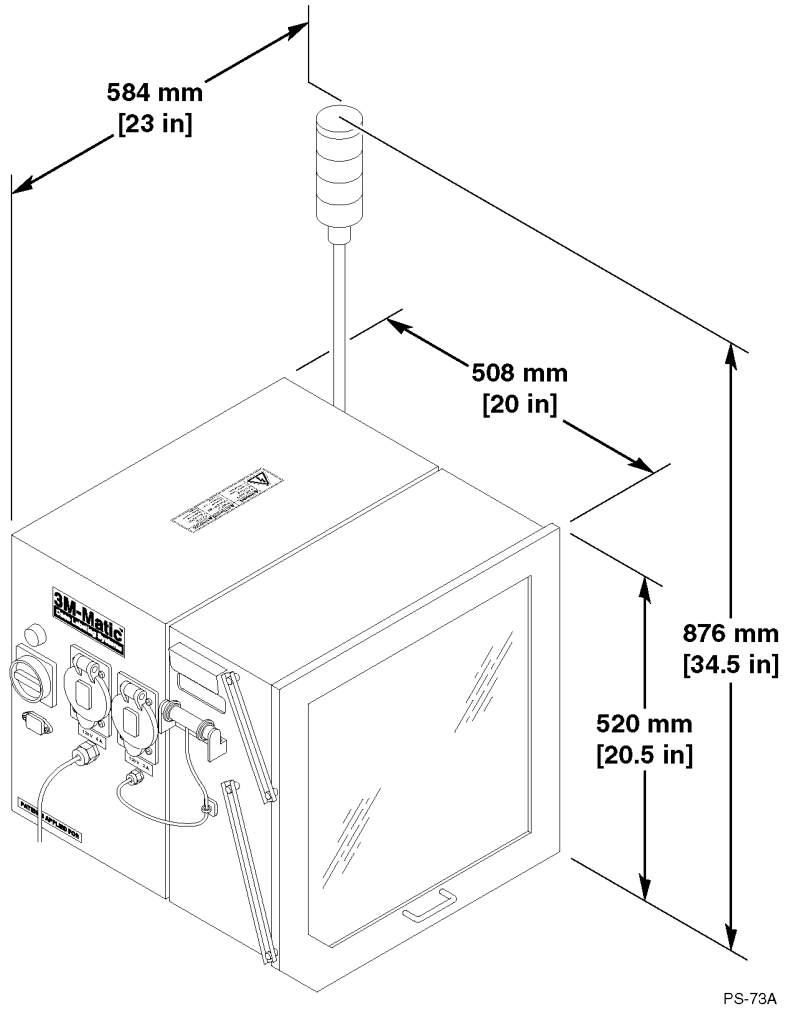


Figure 3-7. PS2000 Applicator Dimensions (Left-Hand Applicator Shown)

3.4 Programmable Controller

The PS2000 applicator uses Allen-Bradley MicroLogix™ 1000 Programmable Controller number 1761-L32BBB. This programmable logic controller (PLC) processes input signals from input devices (such as pushbuttons and photocells) and produces output signals that control output devices (such as motors and indicator lights). PLC input and output signals for the PS2000 applicator are shown below.

PLC Input Signals

- Proximity Sensor
  Festoon Depleted
- Photocells
  Low Tape
  Tape Out
  Registration
  Pause
  Pre-Strip
  Wrap Detector
  Latch
- Pushbuttons
  Reset
  E-Stop
- Print Engine Signals
  Ribbon Low
  Machine Error
  Print Done
  Ready

PLC Output Signals

Case Sealer Power
Pre-Strip Motor Relay
Red Warning Light
Yellow Warning Light
Green Run Light
Start Print (to print engine)
Slew (to print engine)
Abort (to print engine)
Pause (to print engine)

4 Unpacking

4.1 Unpacking PS2000 Applicator

✓ **Note**

It is the customer's responsibility to uncrate the 3M-Matic™ PS2000 Print and Seal Applicator.

1. Cut the bands that secure the shipping carton to the pallet.
2. Lift the carton off the applicator.
3. Cut the bands that hold the packing materials around the applicator.
4. Remove all packing materials from the applicator.
5. Do not remove the contact paper covering the glass in the door. The contact paper will be removed after the applicator is installed on the case sealer.

4.2 Inspection

Upon inspection, if the customer or the technician have not discovered any carton damage or missing components or parts, perform the installation as described in Section 5, Installation. If damage or missing components or parts are discovered, report this immediately by contacting:

3M Packaging Systems Division
Customer Support Center
Phone 1-800-328-1390

This page intentionally left blank.

5 Installation

For future reference, record the 3M-Matic™ PS2000 Print and Seal Applicator's serial number on the front cover of this manual in the space provided.

To begin the installation, follow the instructions provided with the installation kit. The instructions are presented in the order recommended for installing the PS2000 applicator on a 3M-Matic case sealer.

To complete the installation, install the print engine as described in Section 5.2.1 and connect the applicator to the case sealer as described in this manual.

Refer to Figure 6-1 to identify the various components and controls of the PS2000 applicator.

When the installation is complete, contact the Customer Support Center at 1-800-328-1390 to register the system under its Warranty. Provide the following information:

Model Name _____

Type Number _____

Serial Number _____

Follow up the installation by completing and mailing the green Warranty Registration Card.

5.1 Tools Required for Installation and Troubleshooting

1. Tape measure
2. Metric open-end wrenches
3. Metric hex-key wrenches
4. Phillips screwdrivers
5. Flat screwdrivers
6. Crimping tool
7. Laptop computer
8. Labeling software
9. Parallel printer cable (IEEE 1284)
10. Drill and bits (800af/800af3 only)

5.2 PS2000 Applicator Installation

The PS2000 applicator can be installed on the following 3M-Matic case sealers:

- 120af/120af3 Case Sealer Type 19600 (requires Installation Kit 78-8117-3603-8)
- 200a Case Sealer Type 39600 (requires Installation Kit 78-8117-3612-9)
- 700a Case Sealer Type 39600 (requires Installation Kit 78-8117-3604-6)
- 700aks Case Sealer Types 19300 and 29800 (requires Installation Kit 78-8117-3609-5)
- 800a/800a3 Case Sealer Type 39600 (requires Installation Kit 78-8117-3612-9)
- 800af/800af3 Case Sealer Type 39600 (requires Installation Kit 78-8117-3608-7)

✓ Note

Installation instructions are included with each installation kit. The instructions apply only to the parts contained in the installation kit.

To complete the installation, including how to install the print engine and connect the applicator to the case sealer, continue with Subsection 5.2.1, Install Print Engine.

5.2.1 Install Print Engine

1. Open the applicator's door.
2. Remove three socket-head screws securing the tape shelf to the applicator and remove the tape shelf. See Figure 5-1.
3. Remove two socket-head screws; one on each side of the printer opening near the bottom.
4. Install the print engine into the opening in the applicator.
   a. Place the printer into the opening, being careful to align its mounting holes with the holes in the applicator.
   b. Place the tape shelf over the top of the printer and secure it with the three socket-head screws previously removed.
   c. Secure the bottom of the printer with the two socket-head screws previously removed; one on each side.
5. Remove rear cover of applicator by removing two M4 pan head screws.
6. Connect five cables to the sockets at the back of the printer. See Figure 5-2.
   a. Printer power plug
   b. Flat cable
   c. Option (D-Sub connector)
   d. Applicator (D-Sub connector)
   e. 3-pin connector

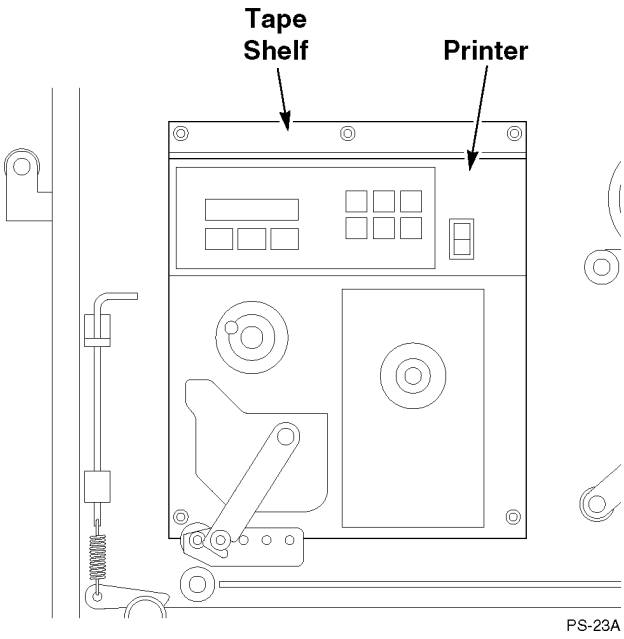


Figure 5-1. Print Engine
(Left-Hand Printer Shown)

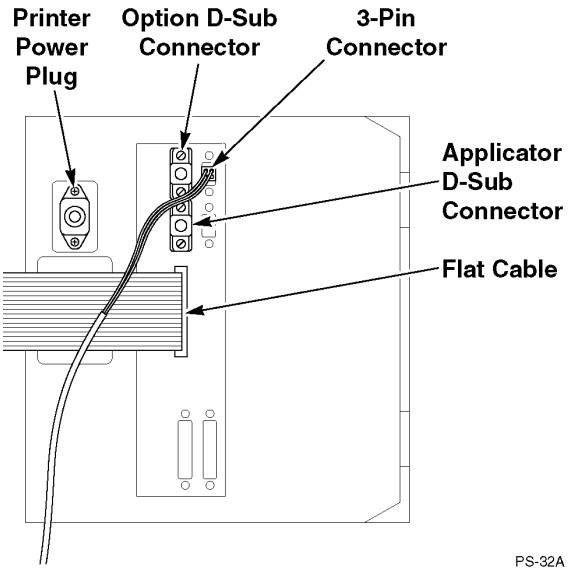


Figure 5-2. Cable Connections
(Left-Hand Printer Shown)

5.2.2 Connect Case Sealer to Applicator

1. Plug the applicator power plug into the receptacle on the side of the applicator (directly under the On/Off switch).
2. Plug the case sealer power plug into the power receptacle on the side of the applicator (next to the On/Off switch).

5.2.3 Reposition Light Pedestal

Reposition the light pedestal assembly to an upright position.

1. Remove one socket-head cap screw securing the base of the light assembly to the side of the applicator and remove the packing material.
2. Remove the other two socket-head cap screws for the light assembly.
3. Align the base of the light pedestal with the holes in the applicator and secure it with the three socket-head cap screws just removed.

5.2.4 Complete Applicator Installation

1. Remove the contact paper from both sides of the glass in the applicator's door.
2. Make sure all fasteners are tight.
3. Check all cables to ensure they are routed properly and cable tied to keep them away from moving parts.
4. Replace the back cover of the applicator and secure it with the two screws previously removed.
5. Plug the applicator power cord into a grounded outlet.

✓ Note

For information about loading and threading printer ribbon and printable tape, continue with Section 6, Operation.

This page intentionally left blank.

6 Operation

✓ Note

Before operating the 3M-Matic™ PS2000 Print and Seal Applicator, read all safety information in Section 1 and observe all safety warnings on the applicator and case sealer.

Refer to Figure 6-1 to acquaint yourself with the various components and controls of the PS2000 applicator.

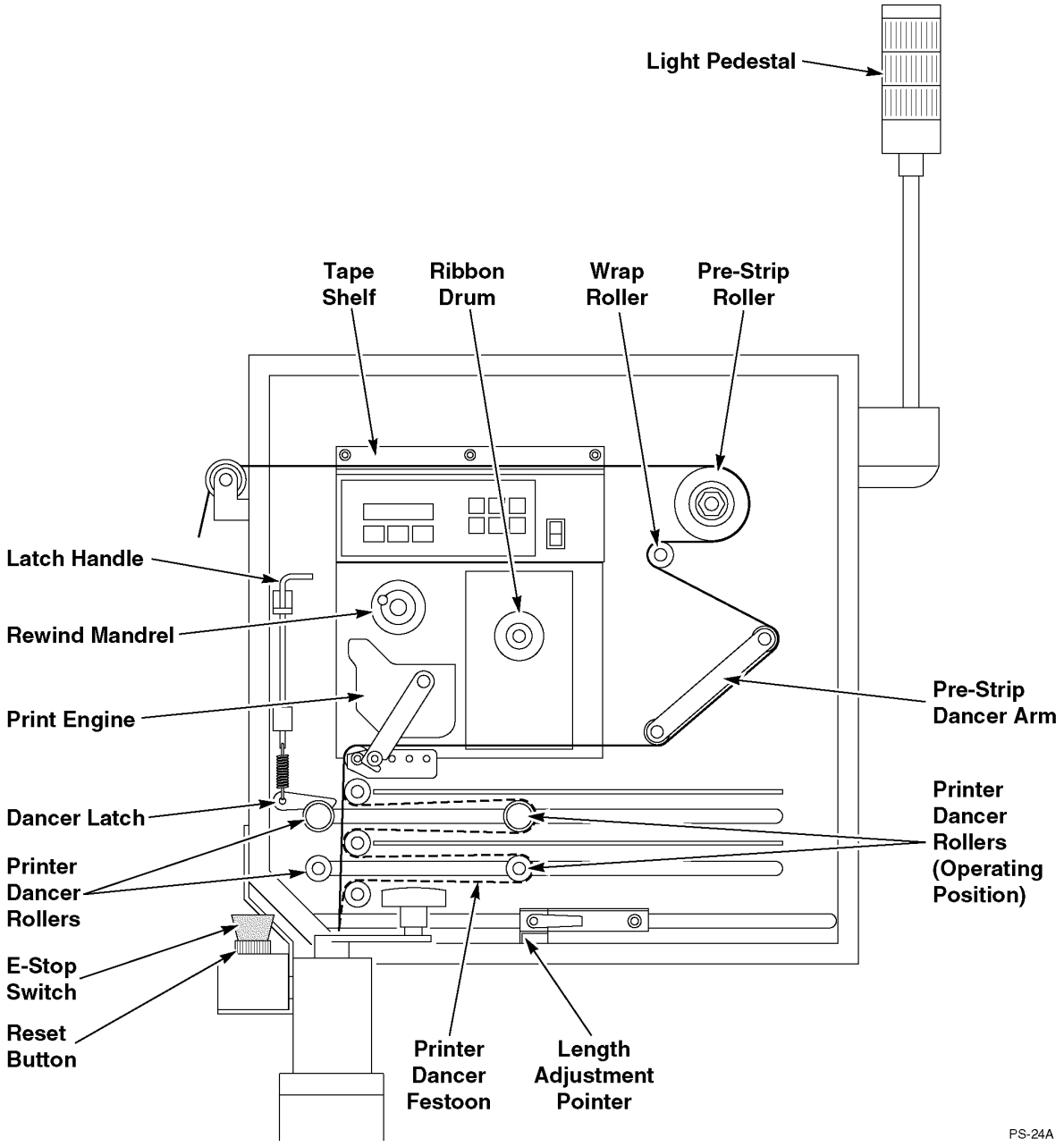


Figure 6-1. PS2000 Applicator Components and Controls (Left-Hand Applicator Shown)

6.1 Applicator Controls and Indicators

Main Power Switch

Turns off all electrical power to the PS2000 applicator, print engine, and case sealer. The power switch is located on the side of the applicator.

✓ Note

If labels are stored in the printer memory, do not shut off the main power switch because the stored data will be lost.

Power ON Light (White)

Lights when the main power switch is ON. The power light is located directly above the main power switch.

Emergency Stop Switch

Pressing the E-stop switch disables electrical power to the applicator and the case sealer. The E-stop switch is located on the E-stop/Reset box, which is attached to the case sealer near the front of the applicator.

To restart the applicator, rotate the E-stop switch knob clockwise to unlatch it and then press the Reset button.

Reset Button

Energizes output circuits, turns off the red lamp and turns on the green lamp on the light pedestal, and enables the pre-strip motor. The Reset button is located on the E-stop/Reset box, which is attached to the case sealer near the front of the applicator.

Light Pedestal

When the main power switch is turned on, all three lights (red, yellow, and green) are ON steady for approximately 15 seconds. During this 15-second start-up period, the print engine boots up.

- **Red Light**

  Turns ON for the following fault conditions:
  E-stop switch pushed
  Print engine error
  Printable tape out
  Printer ribbon out
  Drive roller wrap up
  Dancer roller latched
  No label formats in printer

  All fault conditions must be cleared before the applicator will work.

- **Yellow Light**

  Turns ON for the following conditions:
  Printable tape low
  Printer ribbon low

  The yellow light shows error codes by providing a sequence of flashes when the red light is on. The sequence of flashes repeats until the operator responds to the problem.

Flashes	Problem	Solution
2	E-stop set	Reset E-stop switch.
3	Tape supply out	Load more tape.
4	Printer problem	Correct printer error. Close print head. Press Printer Feed button.
5	Drive roller wrap up	Remove tape from printer drive roller.
6	Dancer roller latched	Unlatch dancer roller.

- **Green Light**

  The green light turns ON when the applicator is in Run mode and no error conditions exist.

6.2 Theory of Operation

When the PS2000 applicator's On/Off switch is turned ON, the Red Warning, Yellow Warning, and Green Run lights on the light pedestal turn ON for approximately 15 seconds while the print engine boots up (printer power must be ON). After the 15-second start-up period, the lights turn OFF and the PLC program enters an Error state until label formats are loaded into the printer and all error conditions are cleared (printer error, ribbon out, tape out, etc.). The Red Warning light turns ON for any fault condition and the fault condition must be cleared before the applicator will work.

For this discussion, it is assumed that printable tape and printer ribbon are loaded and threaded, label formats have been downloaded to the printer, the printer is in a Ready state, printed labels are present in the festoon, and the length adjustment pointer is set to the proper mark on the box length label. It is further assumed that electricity is turned on, no fault conditions exist, and the E-stop switch is not activated.

Pressing the applicator's Reset button places the PLC program in its Run mode, turns ON the Green Run light, and provides power to the case sealer. Pressing the Start button on the case sealer causes the case sealer to start running.

As a box enters the case sealer, the front of the box makes contact with the applying roller of the taping head and the leading edge of the label adheres to the box. The label is applied to the front of the box and as the box moves forward it begins to pull tape. The taping head applies tape to the front, top, and rear of the box as usual. As tape is pulled, the printer dancer rollers move toward the thread-up position. Upon detecting the motion of the printer dancer rollers, the Registration sensor sends a signal to the PLC which sends a signal to the printer directing it to start printing. The printer prints one label of its current print job.

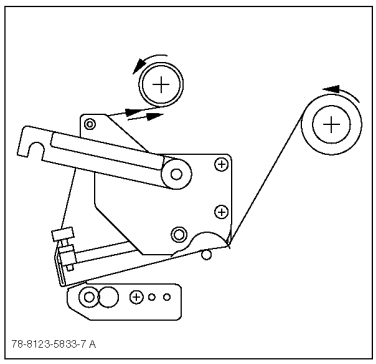
As the print engine prints the label, the tape is driven through the printer head which causes the pre-strip dancer arm to be pulled up. This action causes the Pre-Strip sensor to send a signal to the PLC which sends a signal to the pre-strip motor directing it to turn to pull tape off the supply roll.

The taping head applies a previously printed label to the box and cuts it off. After the tape is applied to the box, the printer dancer rollers move toward their home position. (The printer may still be printing.) After the printer finishes printing, it sends a Print Done signal to the PLC. If the printer dancer rollers have not yet reached their home position, the PLC sends a Slew signal to the printer directing it to slew tape (feed without printing) until the Registration sensor detects that the printer dancer rollers have returned to their home position. To maintain proper label registration, it is critical that the printer slews tape until the printer dancer rollers reach the home position. Therefore, the printed label segment must be shorter than the tape segment applied to the box. The difference is made up by the slew portion of the printer cycle. The printer will raise the print head and brake the ribbon supply so that ribbon is not consumed while slewing tape.

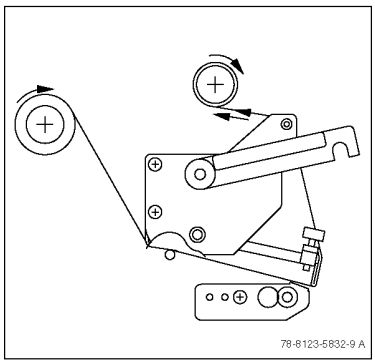
If tape starts to wrap around the platen roller, the Wrap Detector sensor sends a signal to the PLC which sends an Abort signal to the printer directing it to stop printing immediately. This prevents the tape from wrapping around the platen roller and jamming.

6.3 Load and Thread Printer Ribbon

Load and thread the printer ribbon according to the appropriate ribbon threading diagram shown in Figure 6-2. The ribbon threading diagram is also located inside the applicator near the printer.



78-8123-5833-7
(Left-Hand Printer)



78-8123-5832-9
(Right-Hand Printer)

PS-76A

Figure 6-2. Ribbon Threading Diagrams

6.4 Load and Thread Printable Tape

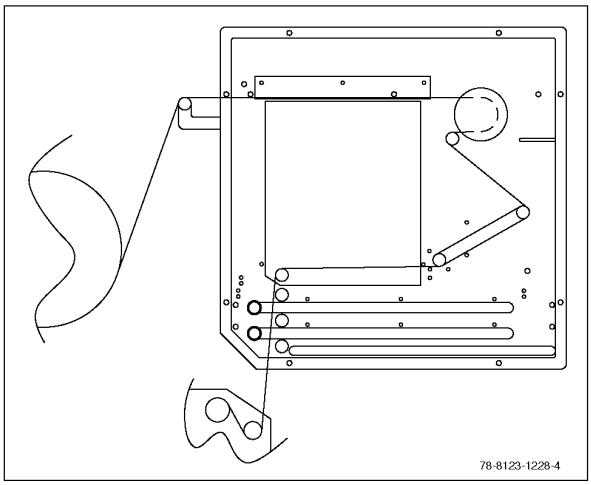
1. Place a supply roll of printable tape on the tape drum.

   Right-hand applicator – tape must unwind in clockwise direction.

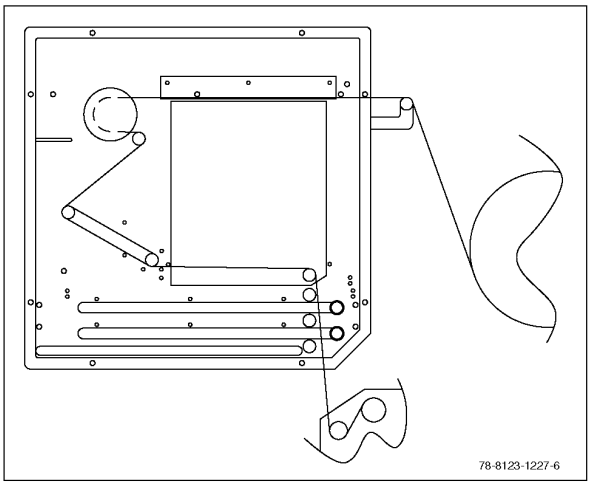
   Left-hand applicator – tape must unwind in counterclockwise direction.

2. Latch the printer dancer rollers by turning the latch handle to the down position and sliding the upper roller to the latch (the lower roller moves with the upper roller). Make sure the upper roller is firmly latched before letting it go.
3. Unlatch the printhead.
4. Pull tape over the entry roller (adhesive side up).
5. Thread tape through the entry slot, over the printer shelf, around the pre-strip roller, over the wrap roller, around the pre-strip dancer arm, and through the printer according to the appropriate tape threading diagram shown in Figure 6-3. The tape threading diagram is also located inside the applicator below the pre-strip roller.
6. Turn on the main power switch and the printer switch, then press the Reset button to enable the pre-strip motor. (This will make it easier to pull tape.)
7. Pull tape from the printer and feed it down through the slot in the base of the applicator, around the tape head wrap roller, and around the one-way tension roller.
8. Continue threading tape as described in the taping head instruction manual.
9. Close the printhead and latch it.
10. Unlatch the printer dancer rollers.

    Turn the latch handle and move it to the up position. Then move the top dancer roller toward the latch. When the latch raises, gently release the roller. Both printer dancer rollers will move together to provide the proper tension on the printable tape.



78-8123-1228-4
(Left-Hand Applicator)



78-8123-1227-6
(Right-Hand Applicator)

PS-75A

Figure 6-3. Tape Threading Diagrams

6.5 Ready Applicator for Printing

1. Turn on the main power switch on the side of the applicator.
2. Connect the data cable from your computer to the parallel port located on the side of the applicator.
3. Download labels to the printer. (Refer to the Label Creation and Downloading section in the *Printer Operation* manual supplied with this manual.)

6.6 Position Printed Label on Box

The PS2000 applicator comes with a generic label that can be used to permanently mark the pointer position for different length boxes. In addition, two box length scales are provided with each installation kit: one with inches and one with millimeters.

- Subsection 6.6.1 describes how to use the generic scale.
- Subsection 6.6.2 describes how to use the box length scales.

These discussions assume that printable tape and printer ribbon are loaded and threaded, label formats were downloaded to the printer, the printer is in a Ready state, and printed labels are present in the festoon.

6.6.1 Generic Scale

1. Pull all slack from the printer dancer festoon, then press the Reset button. The printer dancer rollers will move to the home position. The printer slews tape during this operation.
2. Start the case sealer by pressing its Start button and run at least 7 boxes through the case sealer. Check the position of the printed labels on the boxes.
3. You can change the position of the printed label on the box by moving the pointer.
   a. Press the yellow Pause button.
   b. Loosen the clamping handle and slide the pointer in the direction you want to move the label on the box. Moving the pointer toward the latch moves the label toward the front of the box. Moving the pointer away from the latch moves the label toward the rear of the box. Tighten the handle.
   c. Pull all slack from the printer dancer festoon. Then press the Pause and Reset buttons and start the case sealer.
   d. Run a few boxes through the case sealer to determine the new position of the label. Do not allow several layers of labels to accumulate on the box. This can affect registration.
   e. Repeat this process of pausing the printer, moving the length adjustment pointer, and running test boxes until the label is positioned properly on the box.
   f. Make a permanent mark on the generic scale exactly in line with the pointer. Identify this mark as *Product A*, for example.
   g. Run boxes for other products and repeat this procedure to identify where to set the pointer for each of these products. See Figure 6-4.

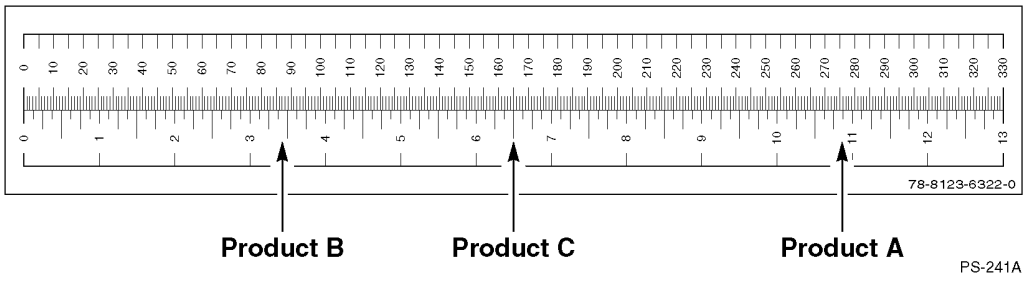


Figure 6-4. Example of Pointer Marks on Generic Scale

6.6.2 Box Length Scales

1. Loosen the clamping handle and move the length adjustment pointer to the mark on the box length scale that corresponds to the length of the box you will be running through the case sealer. Tighten the clamping handle.
2. Pull all slack from the printer dancer festoon, then press the Reset button. The printer dancer rollers will move to the home position. The printer slews tape during this operation.
3. Start the case sealer by pressing its Start button and run as many boxes through the case sealer as the number of labels in the festoon plus two. Check the position of the printed labels on the boxes.
4. You can change the position of the printed label on the box by moving the pointer.
   a. Press the yellow Pause button.
   b. Loosen the clamping handle and slide the pointer in the direction you want to move the label on the box. Moving the pointer toward the latch moves the label toward the front of the box. Moving the pointer away from the latch moves the label toward the rear of the box. Tighten the handle.

      The amount of label movement on the box depends on the amount of pointer adjustment and the number of labels in the festoon. See Figure 6-5.

      Two labels in festoon:
      Change in label position on box = 2 times change in pointer position on label scale.

      Three labels in festoon:
      Change in label position on box = 3 times change in pointer position on label scale.

      Four labels in festoon:
      Change in label position on box = 4 times change in pointer position on label scale.

      Five labels in festoon:
      Change in label position on box = 5 times change in pointer position on label scale.

      Examples: With 3 labels in the festoon, moving the length adjustment pointer 1/4 inch on the scale will cause the label to move 3/4 inch on the box. With 4 labels in the festoon, moving the pointer 1/4 inch on the scale will move the label 1 inch on the box.

   c. Pull all slack from the printer dancer festoon. Then press the Pause and Reset buttons and start the case sealer.
   d. Run a few boxes through the case sealer to determine the new position of the label. Do not allow several layers of labels to accumulate on the box. This can affect registration.
   e. Repeat this process of pausing the printer, moving the length adjustment pointer, and running test boxes until the label is positioned properly on the box.
   f. Reposition the box length scale, if necessary, so that the scale reading at the pointer equals the box length. This adjustment puts the label in register for all other box lengths.

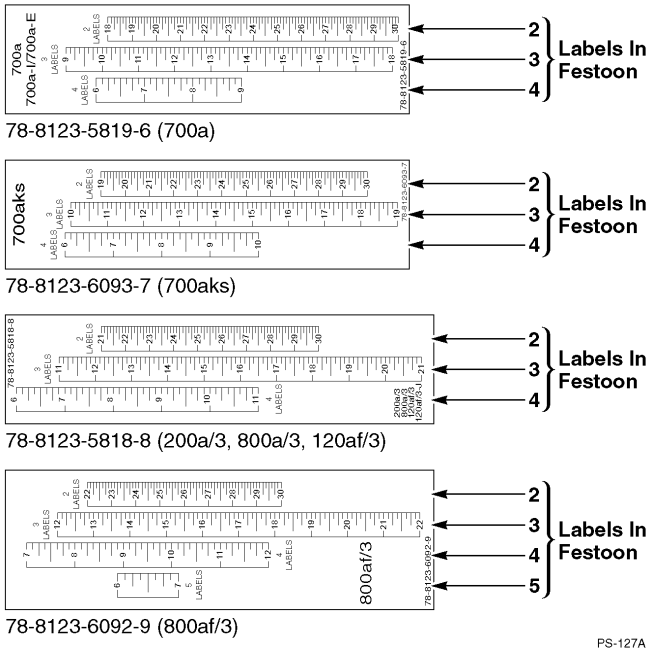


Figure 6-5. Number of Labels in Festoon

6.7 Checkout Inspection

The checkout inspection is to be performed by an authorized service technician representing the 3M-Matic™ PS2000 Print and Seal Applicator Selling Distributor.

6.7.1 Static Tests

Once the applicator is coupled with a 3M-Matic case sealer and printable tape and printer ribbon are installed and threaded, labels are downloaded, covers are closed, and the E-Stop switch is not activated, perform these tests and checks.

1. Connect electrical power to the applicator and power up the machine by turning the Main Power switch to the ON position. The Power light will turn ON.
2. Wait 15 seconds for the printer to boot up, then press the Reset button. Make sure the printer dancer rollers are unlatched from the thread up position so they can fill the festoon with label tape.
3. Verify the Programmable Controller Start-up Conditions as presented in Subsection 6.7.2.

⚠ Warning

Step 3 requires opening the top cover of the applicator to observe the Programmable Logic Controller (PLC). This exposes 100 – 120 VAC. Be cautious or personal injury can result.

4. Check the operation of the latching E-stop switches. Verify that the Red Warning light is ON and all system operations stop when the applicator's E-stop switch is pressed and latched. The case sealer's E-stop switch only stops the case sealer, not the applicator.

⚠ Caution

If the E-Stop switches do not function properly, do not continue with the checkout. Refer to the Theory of Operation and Troubleshooting sections and correct the situation before continuing.

5. Restore the system by pressing the Reset button.

6.7.2 Programmable Controller Start-up Conditions

The Programmable Controller operates under control of Program Software Version 1.01. Figure 6-6 shows the PLC input/output lights that should be ON during a normal start-up sequence. The POWER UP, ERROR, and START states refer to internal PLC states.

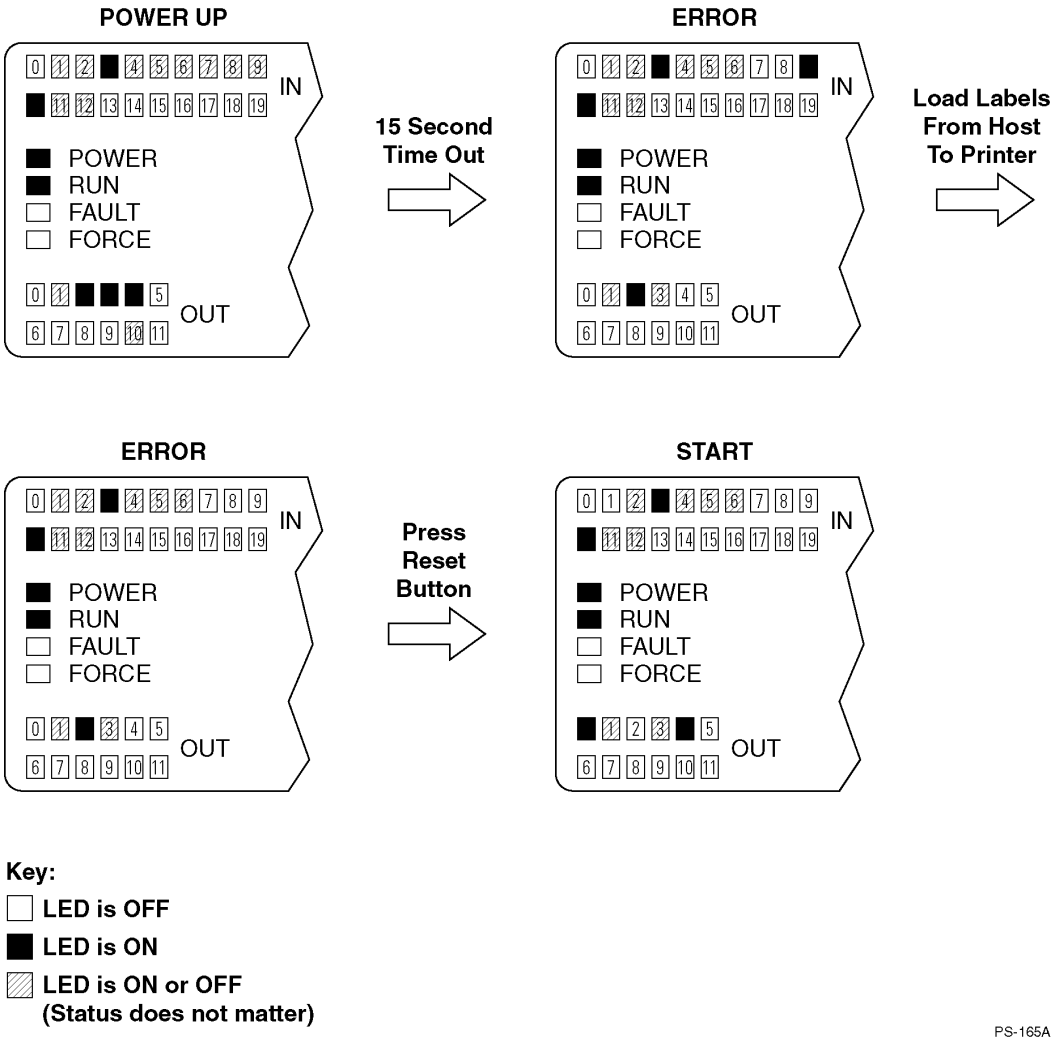


Figure 6-6. PLC Start-up Conditions for Power Up, Error, and Start States

6.7.3 Programmable Controller Inputs and Outputs

Table 6-1 lists the Input LEDs displayed on the Programmable Controller, the names of the input signals that feed the LEDs, and the conditions that cause the LEDs to turn ON or OFF. View the LEDs with the Main Power switch set to the ON position.

Table 6-1. Programmable Controller Inputs

Input LED	Input Signal	LED Condition
0	Not used	
1	Festoon Depleted Proximity Switch (PXS312)	ON when sensor detects vane on printer dancer carriage.
2	Low Tape Photocell (PHC314)	ON when tape supply roll blocks sensor.
3	Tape Out Photocell (PHC316)	ON when printable tape blocks sensor.
4	Registration Photocell (PHC318)	ON when vane on printer dancer carriage blocks sensor.
5	Pause Photocell (PHC320)	ON when vane on printer dancer carriage blocks sensor.
6	Print Engine Ribbon Low	OFF when printer ribbon encoder senses ribbon low condition.
7	Print Engine Machine Error	ON when printer error condition exists.
8	Print Engine Print Done	ON momentarily when printer finishes printing a label.
9	Print Engine Ready	ON when printer error condition exists or label format is not loaded.
10	E-Stop Switch (ES206)	ON when E-stop switch is not pressed and latched.
11	Reset Button (PB206B)	ON when Reset button is pressed.
12	Pre-Strip Photocell (PHC336)	ON when vane on pre-strip dancer shaft blocks sensor.
13	Wrap Detector Photocell (PHC338)	ON when wrap detector senses printable tape.
14	Latch Photocell (PHC340)	ON when vane on printer dancer carriage blocks sensor.
15	Infeed Gating Signal (Non-standard)	This input requires an infeed gating sensor to be installed.

Table 6-2 lists the Output LEDs displayed on the Programmable Controller, the names of the output signals that feed the LEDs, and the conditions that cause the LEDs to turn ON or OFF. View the LEDs with the Main Power switch set to the ON position.

Table 6-2. Programmable Controller Outputs

Output LED	Output Signal	LED Condition
0	Case Sealer Power	ON when PLC energizes case sealer and customer power receptacles.
1	Pre-Strip Motor Relay	ON when PLC energizes pre-strip motor.
2	Red Warning Light	ON when PLC energizes Red Warning light.
3	Yellow Warning Light	ON when PLC energizes Yellow Warning light.
4	Green Run Light	ON when PLC energizes Green Run light.
5	Print Engine Start Print	ON when PLC sends Start Print signal to printer.
6	Not used	
7	Print Engine Slew	ON when PLC sends Slew signal to printer.
8	Print Engine Abort	ON when PLC sends Abort signal to printer.
9	Print Engine Pause	ON when PLC sends Pause signal to printer.
10	Infeed Conveyor (Non-standard)	This output can be used to control an infeed gate.

6.7.4 Dynamic Tests

Ensure that printable tape and printer ribbon have been installed and threaded and labels have been downloaded to the printer, then perform these tests and checks.

1. Make sure the Main Power switch is set to the ON position.
2. Wait 15 seconds for the printer to boot up, then press the Reset button. Make sure the printer dancer rollers are unlatched from the thread up position so they can fill the festoon with label tape.
3. Start the case sealer by pressing its Start button.
4. If the Green Run light is ON and the Red and Yellow Warning lights are OFF, run production applying labels to boxes.
5. If a fault condition turns the Red Warning light ON, check the Static Tests again and/or refer to Section 7, Maintenance and Troubleshooting.
6. Restore the machine and run production.
7. Inspect the labels for the desired position on the box, print quality, and wrinkle-free application.

7 Maintenance and Troubleshooting

7.1 Maintenance

The 3M-Matic™ PS2000 Print and Seal Applicator is designed for long trouble-free service. The applicator performs best when it receives routine maintenance and cleaning. Applicator components that fail or wear excessively should be repaired or replaced promptly to prevent damage to other portions of the machine.

7.1.1 Tools

The applicator uses metric fasteners. The Datamax PE42/PE43 printers use imperial fasteners. The servicing technician should bring to each service call a tool kit containing both metric and imperial open-end and hex-socket wrenches along with other industry-standard hand tools.

⚠ Warning

Disconnect power cord from electrical supply before beginning maintenance. If power is not disconnected, severe personal injury could result.

7.1.2 Cleaning

Fiberboard cartons produce carton-fiber dust as the cartons are processed through the case sealer. This dust buildup can cause component wear. The dust can best be removed from the applicator by using a shop vacuum.

Depending on the volume of cartons being processed and the cleanliness of the environment, cleaning should be done approximately once per month. If the carton volume increases or the applicator operating environment is excessively dusty and dirty, more frequent cleaning may be necessary.

⚠ Caution

Never attempt to remove dirt by blowing it out with compressed air. This causes dirt to be blown inside the motor and between sliding surfaces. Dirt in these areas accelerates wear and component damage.

Never wash the machine with water or subject it to conditions that cause moisture condensation on components. Serious damage could result.

1. Vacuum the machine to remove dust and carton chips.
2. Wipe off grime with a soft cloth dampened with 3M Natural Cleaner (62-4668-2730-0).
3. Wipe off the pre-strip roller with a cloth dampened with isopropyl alcohol. Clean the roller once per shift to prevent build up of the tape's low-adhesive backing on the rubber surface of the roller.
4. Clean the printhead with a cotton swab or cotton cloth dampened with isopropyl alcohol. Clean the printhead after every roll of printer ribbon is consumed.
5. Wipe off the associated carton conveying system rollers, carton guides, and drive belts with a cloth dampened with 3M Natural Cleaner. Make sure the rollers are free on their shafts.

7.1.3 Lubrication

Like most equipment, the applicator must be lubricated periodically to ensure long, trouble-free service. The pre-strip motor is permanently lubricated and does not require additional lubrication.

⚠ Caution

During lubrication, wipe off all excess lubricant and grease. Excess lubricant attracts dust and dirt that can accelerate equipment wear and component damage.

Take care that no lubricant or grease remains on the surface of rollers that will have printable tape wrapped around them.

With reference to Table 7-1 below and reference to figures and part numbers in Section 8, Illustrated Parts Breakdown, lubricate the applicator as indicated.

Table 7-1. Lubrication

Part Name and Number	Frequency and Lubricant	Description
Rod – Front Dancer 78-8123-1369-6 (see Detail W, Item 9)	500 hours NLGI Grade 2, Multipurpose Film Forming with Liquilon, Polymer #400	Lightly coat rod.

7.1.4 Adjustments

The following adjustment procedures assume you will open the applicator's door and remove covers as required to gain access to the adjustment locations.

7.1.4.1 Pre-Strip Roller Edge Guide Adjustment

This adjustment procedure applies to the following serial numbers (later versions have a different type of pre-strip roller without the edge guide):

T1V1 serial numbers 1001 – 1009
T1V3 serial numbers 1001 – 1031

1. Loosen the wing nut located on the end of the pre-strip roller and screw the edge guide in or out by rotating it.
2. Adjust the edge guide so that the pre-strip roller tracks tape properly.
3. Tighten the wing nut.

7.1.4.2 Tape Tracking Adjustment

This adjustment procedure applies to the following serial numbers:

T1V1 serial numbers 1010 and higher
T1V3 serial numbers 1032 and higher

Adjust the edge guides on the entry roller so that tape tracks properly. See Figure 7-1. Also adjust the edge guides on the pre-strip dancer arm roller. See Figure 7-2. The edge guides are adjusted the same on both rollers by sliding them to the desired position on the roller.

1. Adjust the first edge guide (closest to the applicator's center plate) so that it is 22 – 24 mm [7/8 – 15/16 in] from the front edge of the center plate.
2. Depending on whether you are using 2 or 3 inch tape, adjust the second edge guide so it is 50.8 or 76.2 mm [2 or 3 in] away from the first edge guide as shown in the figures.
3. Run boxes and monitor how the tape tracks on the rollers.

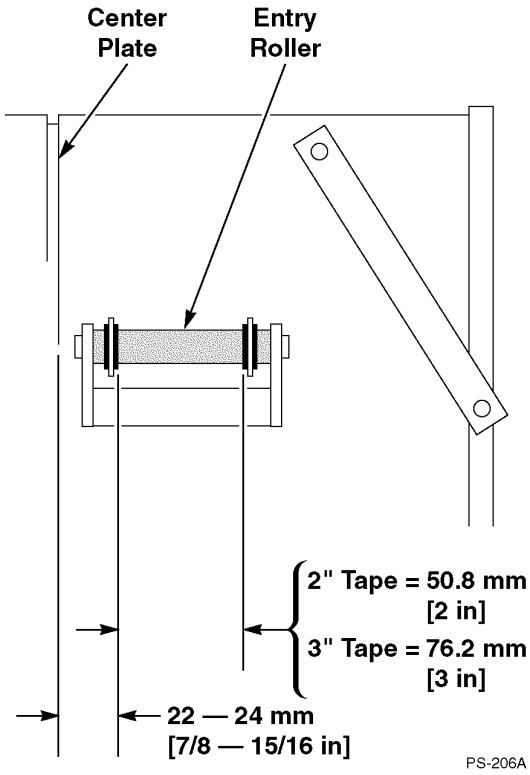


Figure 7-1. Tape Tracking Adjustment on Entry Roller (Left-Hand Applicator Shown)

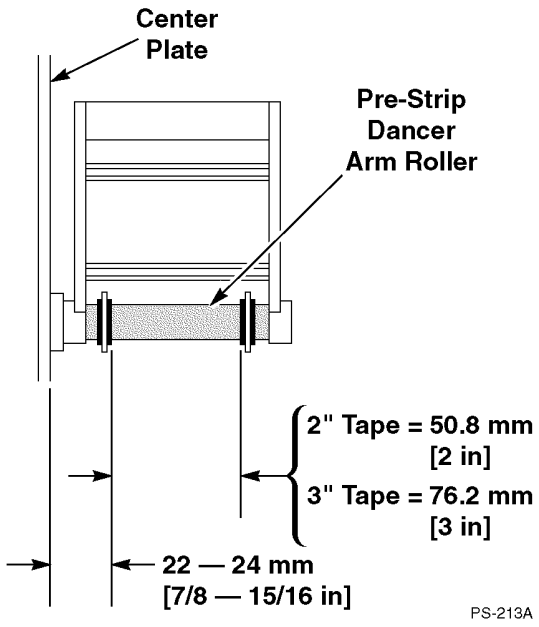


Figure 7-2. Tape Tracking Adjustment on Pre-Strip Dancer Arm Roller (Left-Hand Applicator Shown)

7.1.4.3 Dancer Adjustment

This is not a routine adjustment. Normally, it is necessary only after major disassembly or repair of related components.

1. Hold onto the top dancer roller and cut the printable tape. Gently let the dancer roller move to its relaxed position. Then remove the tape.
2. Loosen the setscrew in the clamping collar using a 2.5 mm hex key (accessible from the rear of the applicator). The clamping collar holds the upper large timing belt pulley from slipping on its shaft. See Figure 7-3.
3. Wind the dancer timing belt on its pulley so that the dancer base moves tight against the shock absorber. Make sure the timing belt teeth mesh properly with the pulley teeth by holding a slight amount of tension on the belt when winding it.
4. Hold the timing belt and pulley in this position and tighten the setscrew in the clamping collar.
5. Thread printable tape according to the tape threading diagram, which is located inside the applicator below the pre-strip roller.

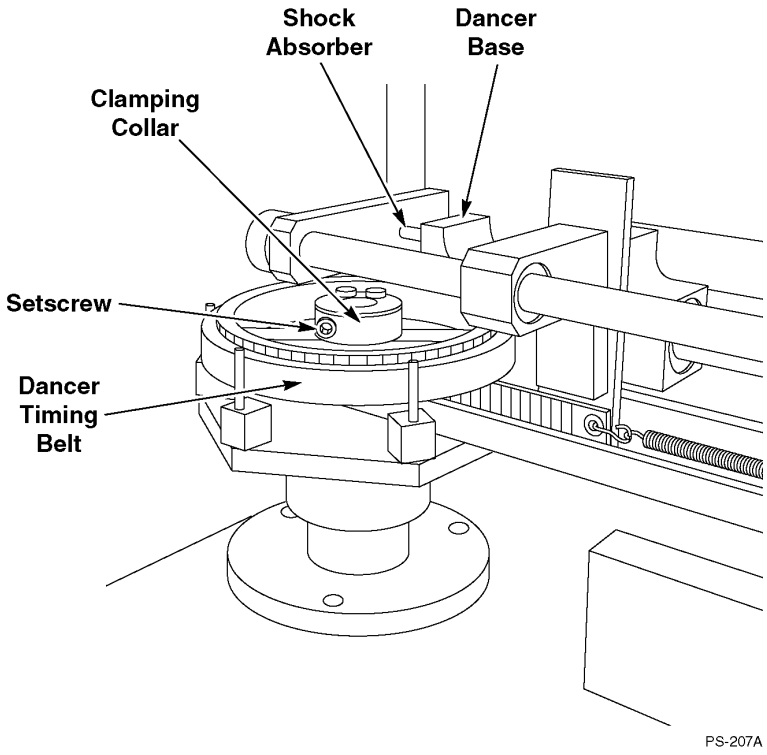


Figure 7-3. Dancer Adjustment (Left-Hand Applicator Shown)

7.1.5 Mechanical Device Factory Set Points

Table 7-2 lists the factory set points for the pre-strip vane and the pre-strip roller tension.

Table 7-2. Mechanical Device Factory Set Points and Adjustment Locations

Mechanical Component	Set Value	Adjustment Location
Pre-Strip Vane	Edge of vane/gap is between sensor legs when pre-strip dancer arm is 45 degrees above horizontal.	Setscrew on pre-strip vane.
Pre-Strip Roller Tension	2.3 – 2.5 kg [5.0 – 5.5 lb] of tangential (turning drag) force.	Center shaft adjusting nut.

7.1.5.1 Pre-Strip Vane

Specification

Adjust the pre-strip vane so it causes the pre-strip motor to turn on as required.

Adjustment

1. Position the pre-strip dancer arm at 45 degrees above horizontal and secure it in this position.
2. Loosen the setscrew on the pre-strip vane (accessible from the rear of the applicator).
3. Rotate the pre-strip vane so the edge of its gap is between the legs of the Pre-Strip sensor as shown in Figure 7-4.
4. Tighten the setscrew and make sure the pre-strip dancer arm can move freely.

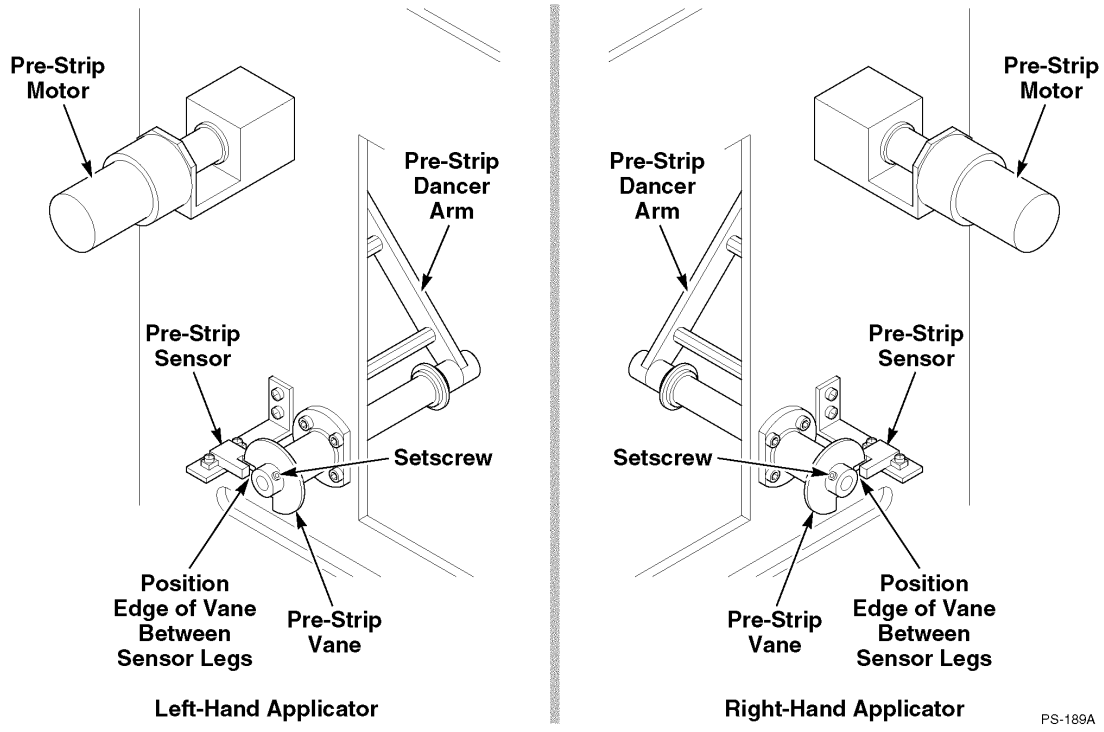


Figure 7-4. Pre-Strip Vane Adjustment

7.1.5.2 Pre-Strip Roller Tension

Specification

Adjust the pre-strip roller tension so that the roller rotates under a tangential force of 2.3 – 2.5 kg [5.0 – 5.5 lb].

Measurement

1. Wrap a cord or small strap (non-adhesive) 4 to 6 turns around the pre-strip roller. See Figure 7-5.
2. Attach a spring gauge to the end of the cord or strap.
3. Insert a 4 mm hex key into the socket in the center of the shaft. Use this key to hold the shaft from turning.
4. Pull the spring gauge until the pre-strip roller rotates. The spring gauge should read 2.3 – 2.5 kg [5.0 – 5.5 lb] when rotating occurs.

Adjustment

1. Use the 4 mm hex key to hold the shaft from turning.
2. Turn the self-locking adjusting nut (17 mm) on the pre-strip roller center shaft to adjust the holding force (CW – increases holding force; CCW – decreases holding force).

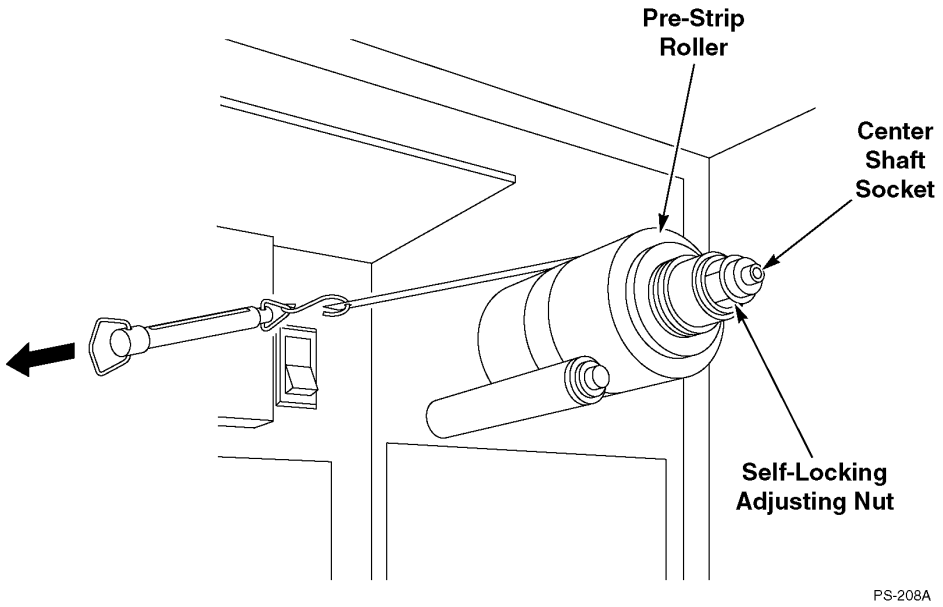


Figure 7-5. Pre-Strip Roller Tension Adjustment (Left-Hand Applicator Shown)

7.1.6 Electrical Device Factory Set Points

Table 7-3 lists the factory set points for various electrical devices. The table also describes the location of each adjustment. See Subsection 7.2.3.2, Sensor Locations.

Table 7-3. Electrical Device Factory Set Points and Adjustment Locations

Electrical Component	Set Value	Adjustment Location
Tape Out Sensor	Gain set 1/4 of a turn CW from fully CCW.	Side of sensor.
Low Tape Sensor	Operation Mode – Light ON. Mode set fully CW. Gain set 8 turns CW from fully CCW.	Remove clear plastic cover to access adjusting pots.
Festoon Depleted Proximity Sensor	Gap to sense is set to 3.2 mm [1/8 in]. Center of sensor is set 6.4 mm [1/4 in] from latch end of adjustment slot.	Mounting bracket.

7.1.6.1 Tape Out Sensor

This is not a routine adjustment. Normally, it is necessary only after major disassembly or repair of related components.

Specification

Adjust the Tape Out sensor so it detects tape properly.

Adjustment

1. Use a small, standard, straight-edge screwdriver to adjust the Tape Out sensor, which is located between the entry roller and the applicator. See Figure 7-6.
2. Locate the adjusting screw on the side of the Tape Out sensor and gently turn it 1/4 of a turn CW from fully CCW position, being careful not to damage the adjusting screw.

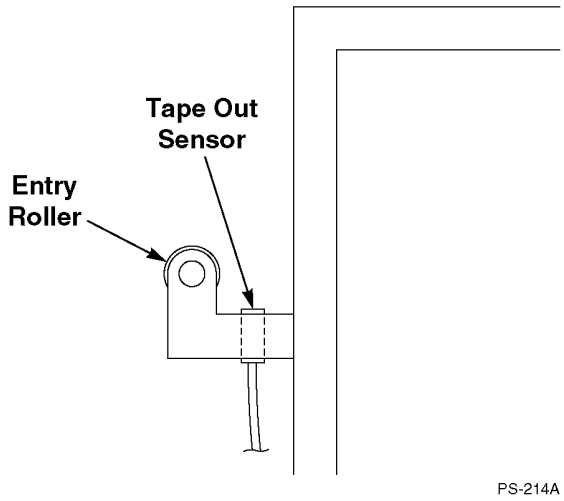


Figure 7-6. Tape Out Sensor Adjustment
(Left-Hand Applicator Shown)

7.1.6.2 Low Tape Sensor

Specification

Adjust the sensitivity of the Low Tape sensor so it detects the tape supply roll. Adjust the position of the sensor so it detects the desired amount of tape left on the roll. See Figure 7-7.

Adjustment

1. Install a full roll of tape on the tape drum.
2. Remove the clear plastic cover from the base of the Low Tape sensor.
3. Use a small, standard, straight-edge screwdriver to adjust the sensor, being careful not to damage the adjusting screws.
4. Turn the Gain potentiometer fully CCW, then adjust it 8 turns CW.
5. Gently turn the Mode potentiometer fully CW; the light turns ON.
6. Replace the clear plastic cover.
7. Loosen the plastic locking nut and slide the sensor up or down in the slot to adjust the desired level of low tape (up – increases amount of tape left on roll; down – decreases amount of tape left on roll).
8. Tighten the plastic locking nut.

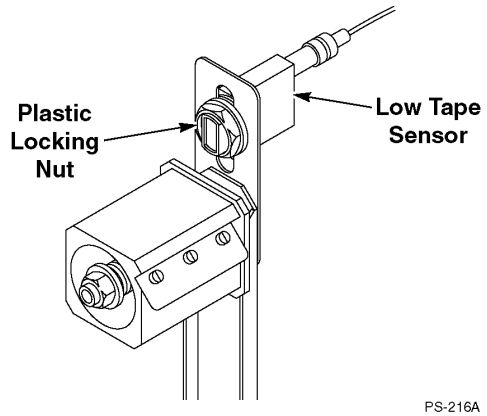


Figure 7-7. Low Tape Sensor Adjustment

7.1.6.3 Festoon Depleted Proximity Sensor

This is not a routine adjustment. Normally, it is necessary only after major disassembly or repair of related components.

Specification

Set the gap between the Festoon Depleted proximity sensor and the vane on the printer dancer carriage so that the vane is detected when it breaks the emitted sensor field. See Figure 7-8.

Adjustment

1. Loosen the securing ring and carefully remove the electrical lead.
2. Loosen the front and rear locking nuts that secure the proximity sensor to its mounting bracket.
3. Adjust the center of the sensor to 6.4 mm [1/4 in] from the latch end of the adjustment slot.
4. Set the gap between the sensor face and the vane on the printer dancer carriage to 3.2 mm [1/8 in].
5. Tighten the front and rear locking nuts to secure the proximity sensor in place.
6. Carefully connect the electrical lead and tighten the securing ring.

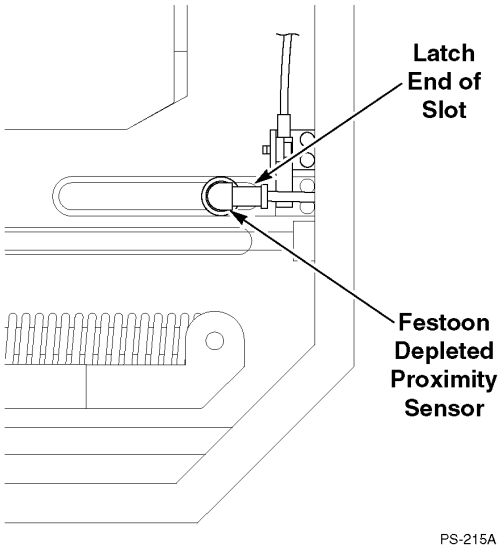


Figure 7-8. Festoon Depleted Proximity Sensor Adjustment

7.2 Troubleshooting

7.2.1 General

Read Section 6, Theory of Operation, so that the operational characteristics of the machine are understood.

7.2.2 Troubleshooting Guide

Table 7-4 lists problems that may occur with the PS2000 applicator, provides possible causes of the problems, and suggests how to correct the problems.

Table 7-4. Troubleshooting Guide

Problem	Possible Cause	Correction
PS2000 applicator does not turn ON; power light is OFF.	Unit unplugged.	Check to make sure unit is plugged into appropriate electrical supply.
	Fuse blown.	Check and replace fuses as needed. If fuses continue to fail, consult qualified service technician.
	Circuit breaker tripped.	Check wiring and reset circuit breakers. If circuit breakers continue to trip, consult qualified service technician.
Printer displays: APPLICATOR ERROR. (This error message is self canceling when error condition is corrected.)	E-stop switch latched.	Turn E-stop switch knob clockwise to reset.
	Applicator in thread-up position.	Unlatch printer dancer rollers.
	Tape supply out.	Load more tape.
	Wrap Detector photocell activated.	Check orange platen roller for tape wrap. Clear tape from roller and rethread tape.
	Applicator and Option cables reversed on back of printer or not connected.	Plug Applicator cable into Applicator port. Plug Option cable into Option port.
Printer displays: RIBBON FAULT. (Clear error message by pressing green Feed button after error condition is corrected.)	Ribbon core slipping.	Check that ribbon supply core fits snugly on ribbon supply hub. Check that ribbon rewind core fits snugly on ribbon rewind mandrel. Try using ribbon rewind key inserted under ribbon core to increase traction between core and rewind mandrel.
	Ribbon broke.	Decrease heat setting used to print labels. Ribbon may break if printer heat is burning through polyester carrier on ribbon.
	Ribbon installed incorrectly.	Verify that dull side of ribbon is facing label tape.
	Incorrect media and ribbon combination may result in insufficient friction between media and ribbon.	Use 3340 Scotch™ Printable Tape and 5860-A or 5860-B Scotch™ Thermal Transfer Ribbon.
	Defective Ribbon sensor on rewind hub.	Replace Ribbon sensor.

Table 7-4. Troubleshooting Guide (continued)

Problem	Possible Cause	Correction
Printer displays: HEAD UP FAULT. (This error message is self canceling when printhead is lowered.)	Printhead is up.	Lower printhead and latch it closed.
No label formats downloaded to printer.	Connection is loose on label format programming cable.	Check programming cable connections at host computer, applicator, and printer.
	Communication setting on printer is incorrect.	Set printer communication setting to appropriate value using keypad on printer control panel. Set to Port A or Port B for serial communication, and Parallel for parallel communication.
	Partial format is in printer buffer.	Reset printer. Press Pause and Reset buttons simultaneously.
Label positioned incorrectly on box.	Length adjustment pointer set to wrong box length.	Move length adjustment pointer to match box length.
Label format prints out too long.	Label is formatted for Peel Off, Black Mark, or Gap.	Set label format sensor to Continuous. See Label Creation and Downloading in *Printer Operation* manual.
Labels do not maintain registration on box.	Printed label length is too long for box.	Decrease label length in label format. See Label Creation and Downloading in *Printer Operation* manual.
	Box length varies.	Use boxes with consistent length. Reformat label to allow more variation in box length. See Label Creation and Downloading in *Printer Operation* manual.
Poor print quality.	Printer heat setting is too low.	Increase printer heat setting. See Printer Heat Setting in *Printer Operation* manual.
	Printer speed setting is too high.	Decrease printer speed setting. See Printer Speed Setting in *Printer Operation* manual.
	Printhead is loose.	Tighten screws that hold printhead down.
	Printhead is out of adjustment.	Adjust printhead. See Printhead Level Adjustment and Printhead Burn Line Adjustment in *Printer Operation* manual.
Images are missing from printed label.	Printer memory module was cleared by cycling power or resetting printer. Labelview does not resend bitmap images automatically.	Close Labelview file, then reopen the file and send label format to printer.
Tape wraps up on printer roller.	Wrap Detector cable is unplugged or Wrap Detector is not adjusted properly.	Plug Wrap Detector cable into printer. Adjust Wrap Detector photocell. See Wrap Detector Adjustment in *Printer Operation* manual.

7.2.3 Electrical System

The electrical system for the PS2000 applicator is described in this subsection.

7.2.3.1 Electrical Diagram

The electrical diagram for the PS2000 applicator is shown in Figure 7-8 on the next three pages. The first page contains the power distribution, circuit breakers and external electrical connections, DC power supply, and E-stop and Reset switches. The second page contains inputs to the PLC, such as photoelectric sensors, switches, and signals from the printer. The third page contains outputs from the PLC which control motors, indicator lights, and control relays.

Many of the components shown on the electrical diagram are located on an electrical panel mounted inside the applicator. See Figure 8-7, Electrical Components, in Section 8, Illustrated Parts Breakdown.

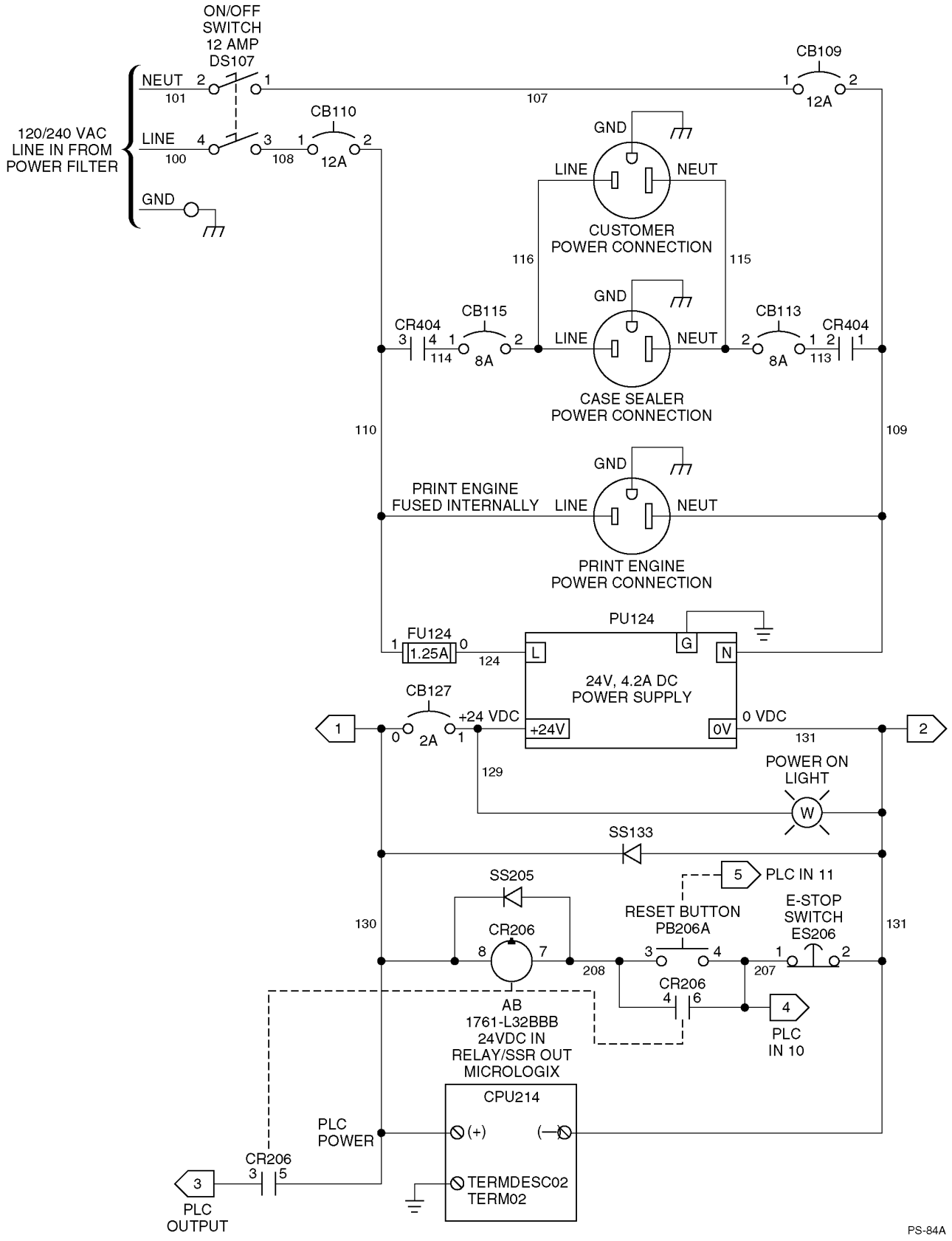


Figure 7-8. Electrical Diagram (1 of 3)

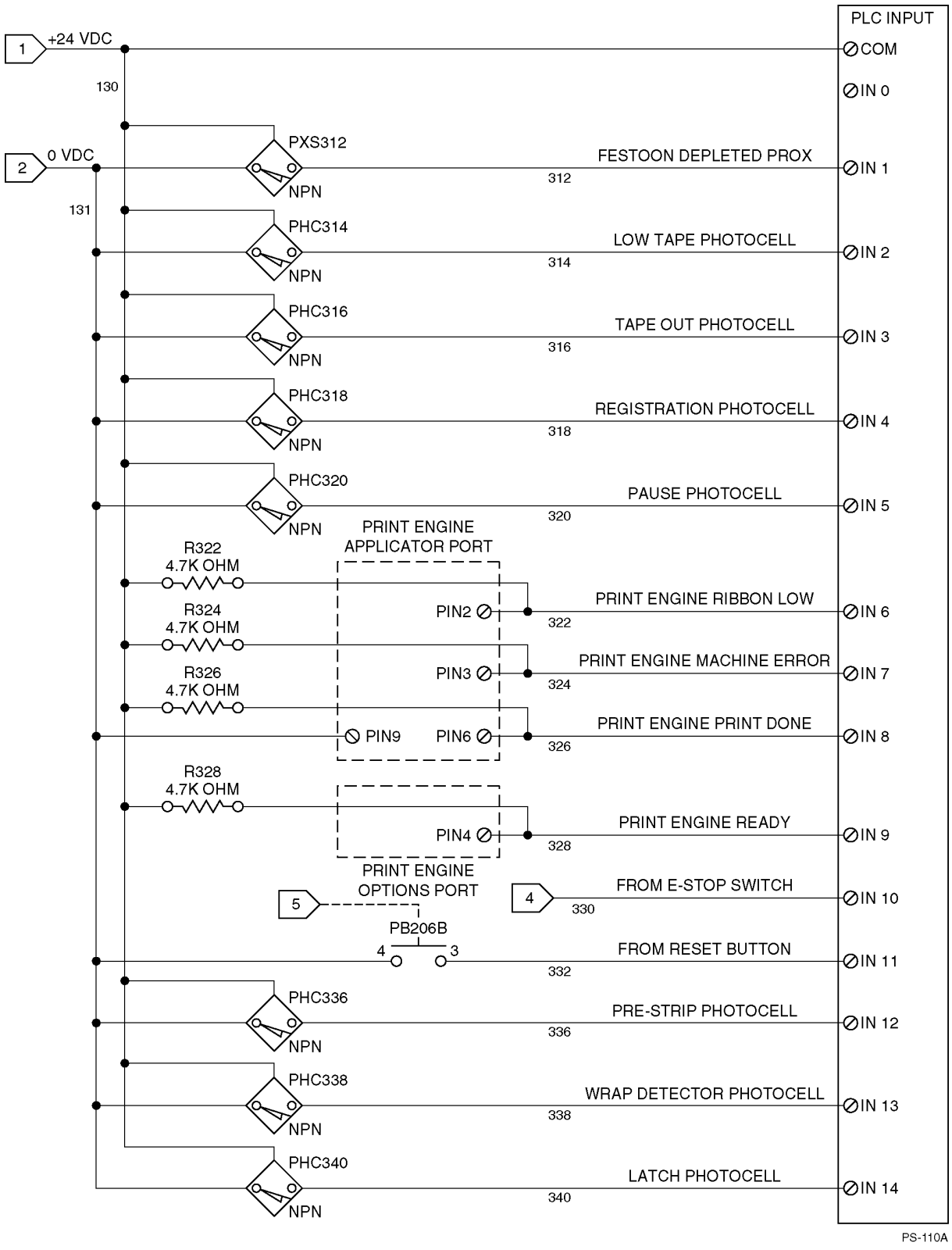


Figure 7-8. Electrical Diagram (2 of 3)

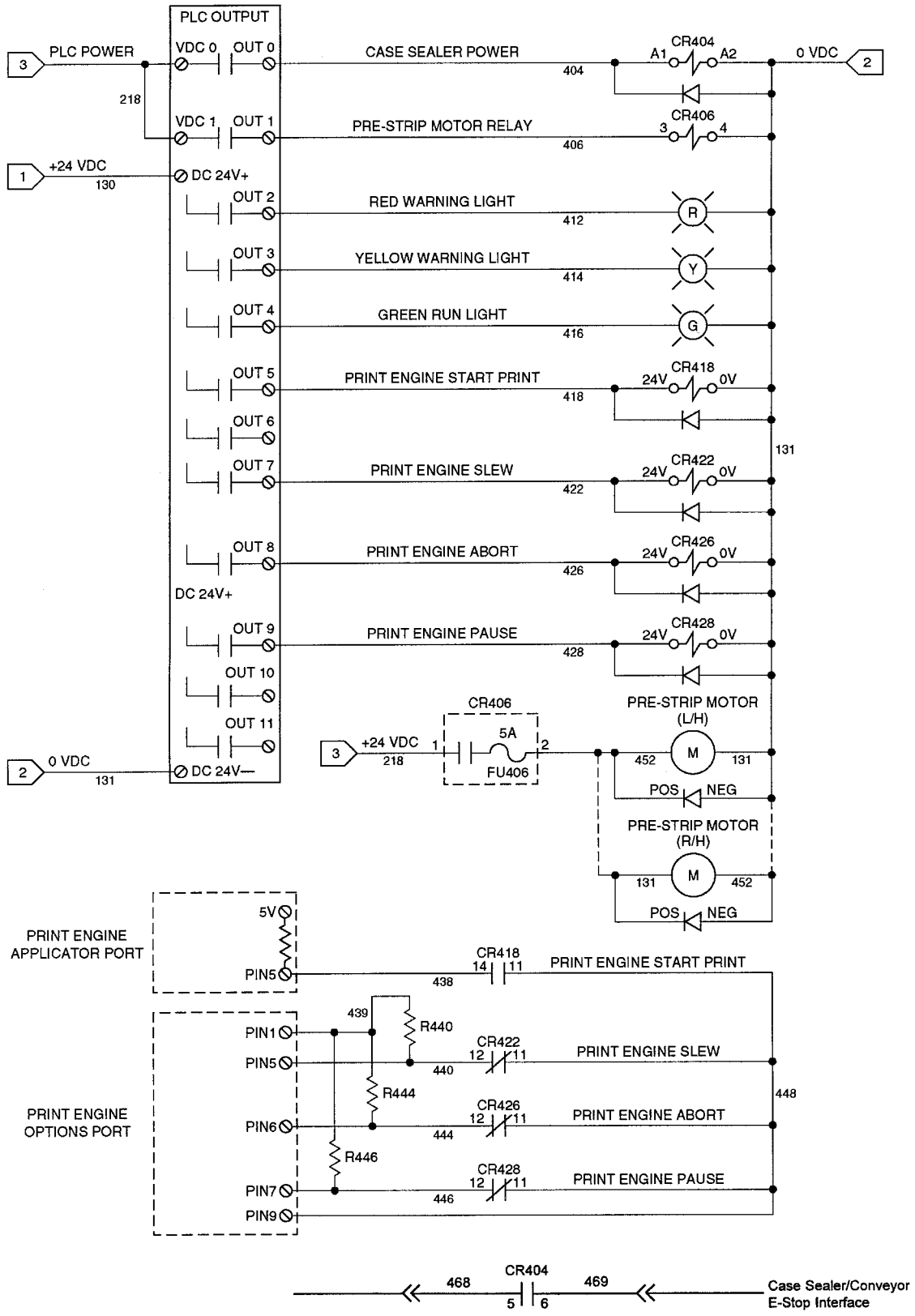


Figure 7-8. Electrical Diagram (3 of 3)

7.2.3.2 Sensor Locations

Figure 7-9 shows the location of the various sensors that provide input signals to the PLC. The figure is viewed from the back of the PS2000 applicator with the back cover removed.

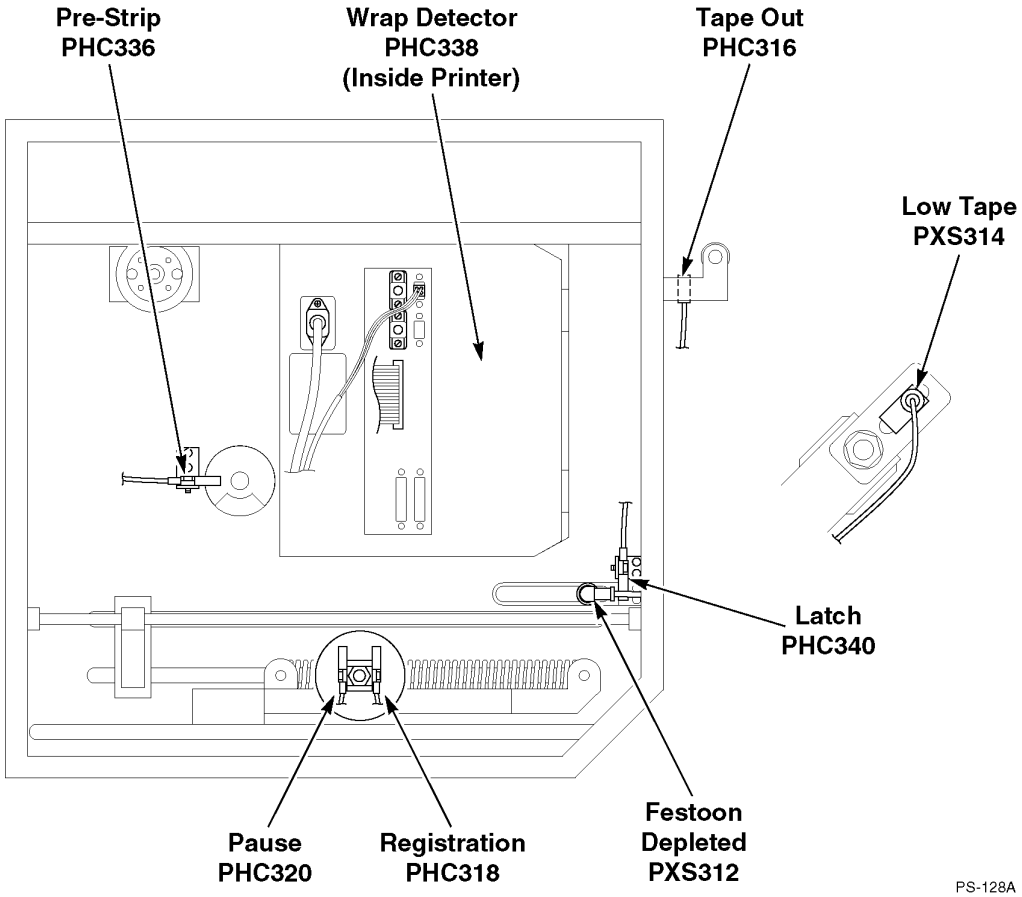


Figure 7-9. Sensor Locations (Left-Hand Applicator Shown)

7.2.3.3 Fuses and Circuit Breakers

Figure 7-10 shows the locations of the fuses and circuit breakers and describes the fault conditions for which they should be checked.

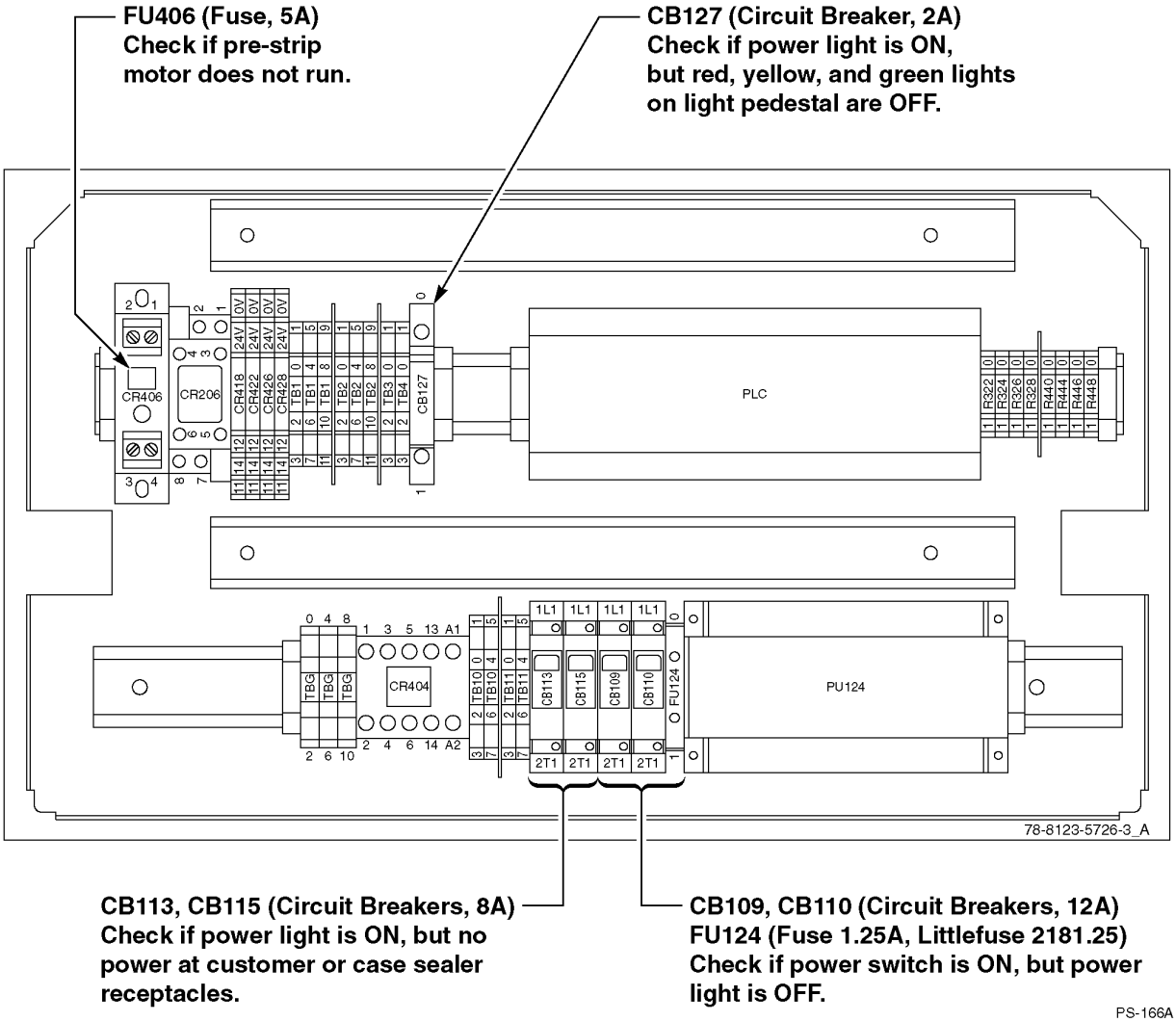


Figure 7-10. Fuse and Circuit Breaker Locations (Left-Hand Electrical Panel Shown)

7.2.3.4 Electrical Circuit Fault Conditions

The PS2000 applicator displays electrical circuit fault conditions by lighting the Red Warning light on the stacked light pedestal.

The Table 7-5 lists the component states that turn on the Red Warning light. The table also presents the Input LED conditions along with probable corrections.

✓ **Note**

The Red Warning light turns on for any fault condition and remains on until the fault condition is corrected.

Table 7-5. Electrical Circuit Fault Conditions and Corrections

Component State	Input LED	Correction
Festoon Depleted proximity sensor is activated.	Input 1 ON	Check printer display for error message and correct fault condition. Press Reset button to replenish festoon.
Tape Out sensor is not sensing label tape.	Input 3 OFF	Load new roll of label tape on tape drum. Thread label tape through applicator.
Print engine machine error.	Input 7 ON	Check printer display for error message and correct fault condition.
Printer is not ready.	Input 9 ON	Clear any fault conditions from printer and download labels to printer.
E-stop switch is activated.	Input 10 OFF	Reset latching E-stop switch.
Wrap Detector photocell detects printable tape.	Input 13 ON	Clear tape from wrap detector fiber optic near printer platen roller.
Latch photocell is activated.	Input 14 ON	Unlatch printer dancer rollers from thread-up position.

This page intentionally left blank.

8 Illustrated Parts Breakdown

8.1 How to Order Replacement Parts

1. Refer to the figures and their related parts on the following pages to determine the individual part number and description.
2. Order parts by machine model number, part number, description, and quantity required. (An order form is included at the end of this manual section).

   Minimum billing on parts orders is $25.00. Replacement part prices are available upon request. A $10.00 restocking charge per invoice applies to returned parts.
3. Replacement parts and part prices are available directly from:

3M Tape Dispenser Parts	715/268-8126
241 Venture Drive	800/344-9883
Amery, WI 54001-1325	FAX # 715/268-8153

✓ Note

Outside the U.S., contact the local 3M subsidiary for parts ordering information.

8.2 Recommended Spare Parts

The following parts periodically require replacement due to normal wear. They should be ordered immediately and kept on site. These parts should be reordered as they are consumed to keep the PS2000 applicator in good operating condition and to enable quick repair if needed..

Part Number	Description	Quantity
26-1014-8510-5	Datamax 203 DPI Print Head for PE42 Print Engine	1
26-1014-8511-3	Datamax 305 DPI Print Head for PE43 Print Engine	1
26-1014-9273-9	Datamax Platen Roller for PE42/PE43 Print Engines	1
26-1014-6795-4	Fuse – Slo-Blo, 1.25 Amp, 5 mm x 20 mm, Littlefuse # 2181.25	1
78-8123-1340-7	Wheel, Belt	1
78-8123-1369-6	Rod, Front Dancer	1
78-8003-7899-0	Bearing, Flanged, 5/8 in ID x 3/4 in OD x 1/2 in Lg	2
78-8161-8102-4	Bearing, 3/8 in ID x 1/2 in OD x 1/2 in Lg	1
78-8161-4227-3	Bearing, Flanged, 3/8 in ID x 1/2 in OD x 1/2 in Lg	1
78-8123-1381-1	Belt, Spring Timing	1
78-8123-1382-9	Belt, Dancer Timing	1
26-1014-8849-7	Spring, Music Wire, Associated #E-1250-115-7500	1
12-7995-5379-2	Bearing, Ball, 3/8 in ID, W/2 Shields, Flanged, Fafnir #FS3KDD	1
78-8005-1189-7	Bearing, Ball, 3/8 in ID, W/2 Shields, Fafnir #S3KDD	1
78-8000-8613-0	Clutch, One-way, 1/4 in ID, Torrington #RC-040708	1
26-1014-8842-2	Bearing, 3/8 in ID, Pacific #PS0610-4	1
26-1014-9331-5	Spring, Music Wire, ZN PL, Century #5275	1
78-8002-4779-9	Clutch, One-way, 3/8 in ID x 5/8 in OD x 7/8 in, Torrington #RCB-061014	1
26-1014-9204-4	Bushing, Ball, .5 in ID x .875 in OD x 1.25, Thompson #A-81420	2
26-1014-3457-4	Fuse, 5A, Buss PCE-5	1

8.3 Figures and Page Numbers

Figure	Description	Page
Figures 8-1 through 8-6	Machine Assembly	8-3 through 8-8
Figure 8-7	Electrical Components	8-18
Figure 8-8	Detail AA	8-20
Figure 8-9	Detail BB	8-22
Figure 8-10	Detail CC	8-24
Figure 8-11	Detail DD	8-26
Figure 8-12	Detail EE	8-28
Figure 8-13	Detail FF	8-30
Figure 8-14	Detail HH	8-32
Figure 8-15	Detail A	8-34
Figure 8-16	Detail B	8-36
Figure 8-17	Detail C	8-38
Figure 8-18	Detail D	8-40
Figure 8-19	Detail E	8-42
Figure 8-20	Detail F	8-44
Figure 8-21	Detail G	8-46
Figure 8-22	Detail H	8-48
Figure 8-23	Detail I	8-50
Figure 8-24	Detail J and K	8-52
Figure 8-25	Detail L	8-54
Figure 8-26	Detail M	8-56
Figure 8-27	Detail N	8-58
Figure 8-28	Detail P	8-60
Figure 8-29	Detail Q	8-62
Figure 8-30	Detail R	8-64
Figure 8-31	Detail S	8-66
Figure 8-32	Detail T	8-68
Figure 8-33	Detail U	8-70
Figure 8-34	Detail V	8-72
Figure 8-35	Detail W	8-74
Figure 8-36	Detail X	8-76
Figure 8-37	Detail Y	8-78
Figure 8-38	Detail Z	8-80

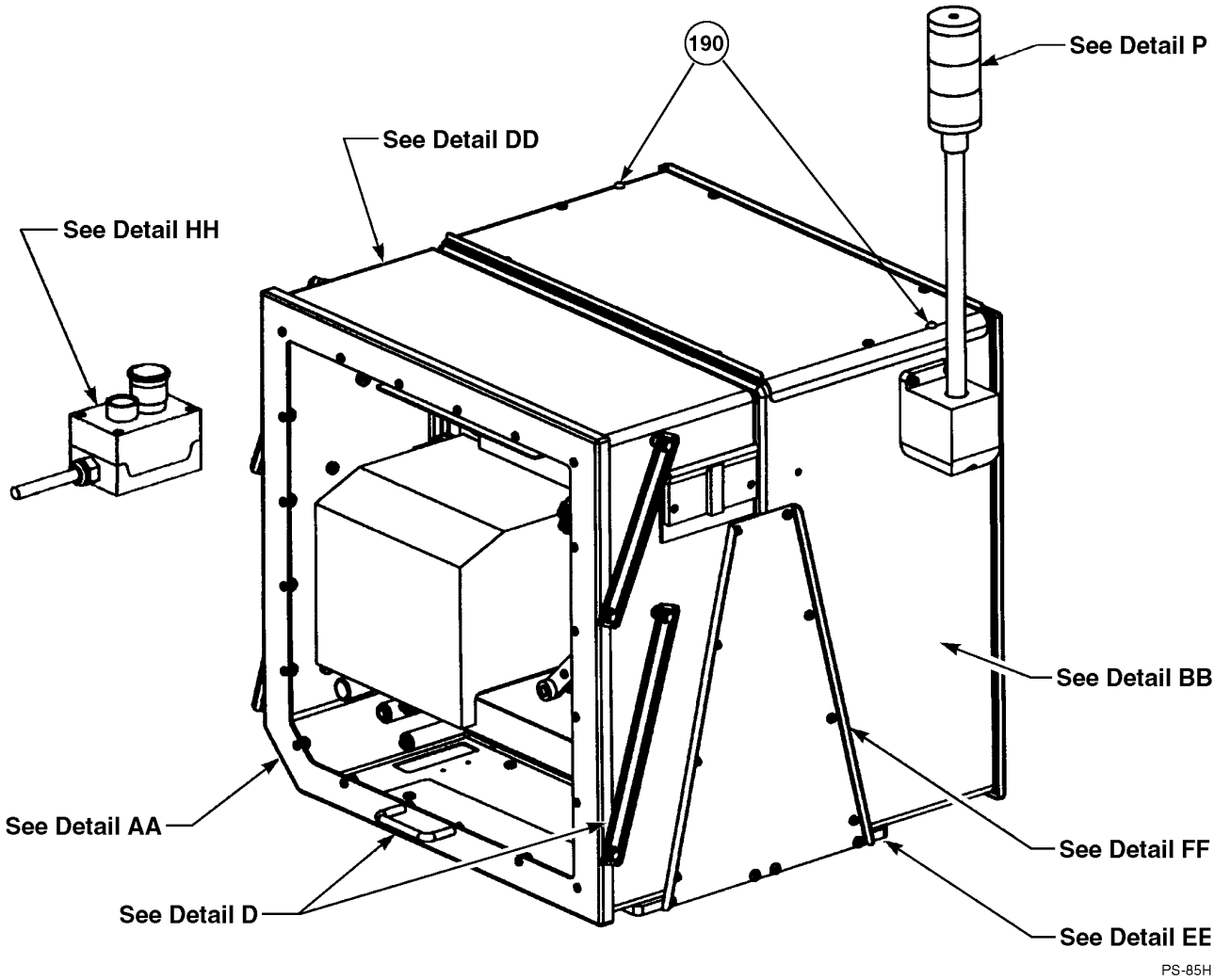


Figure 8-1. Machine Assembly 1

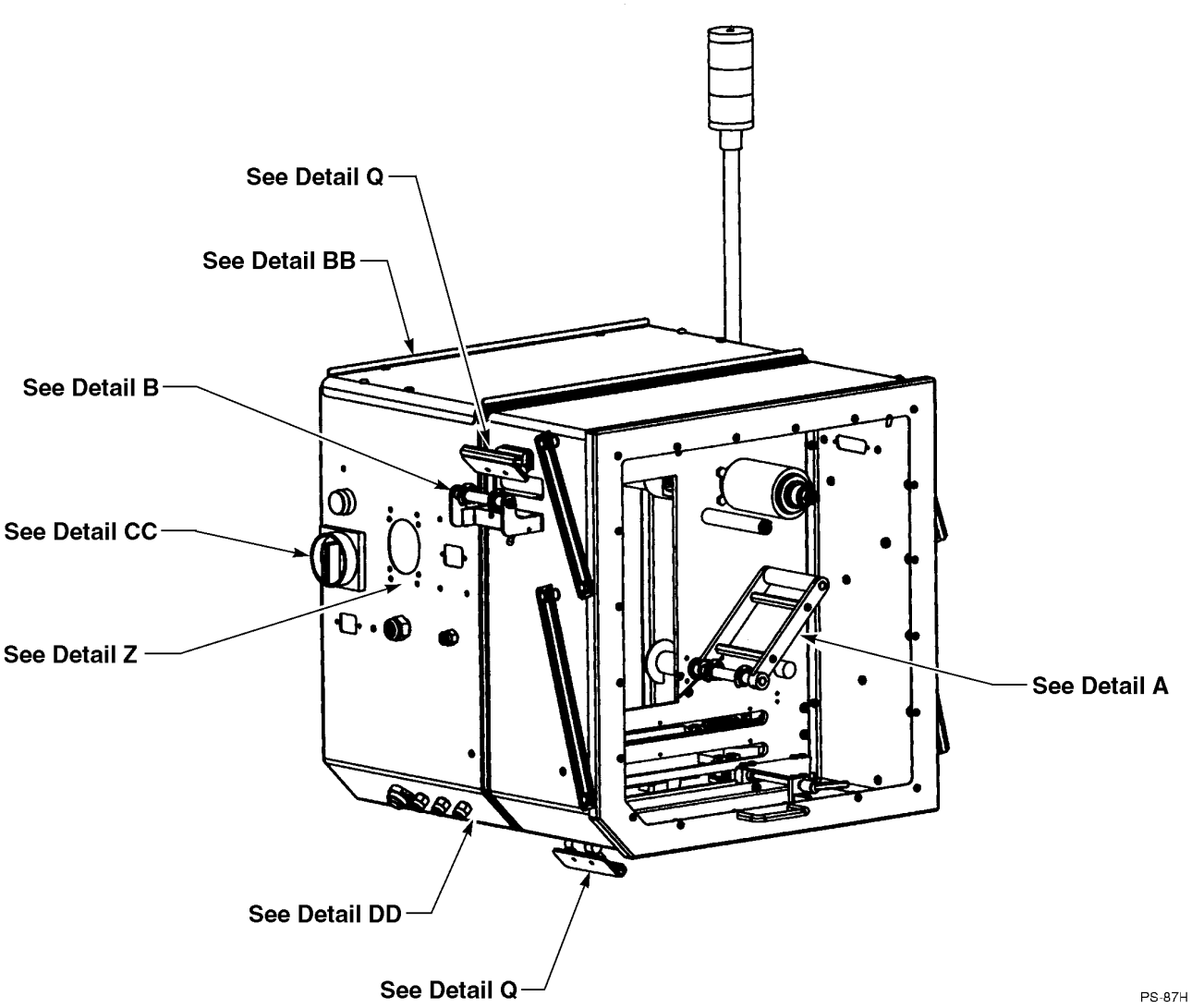


Figure 8-2. Machine Assembly 2

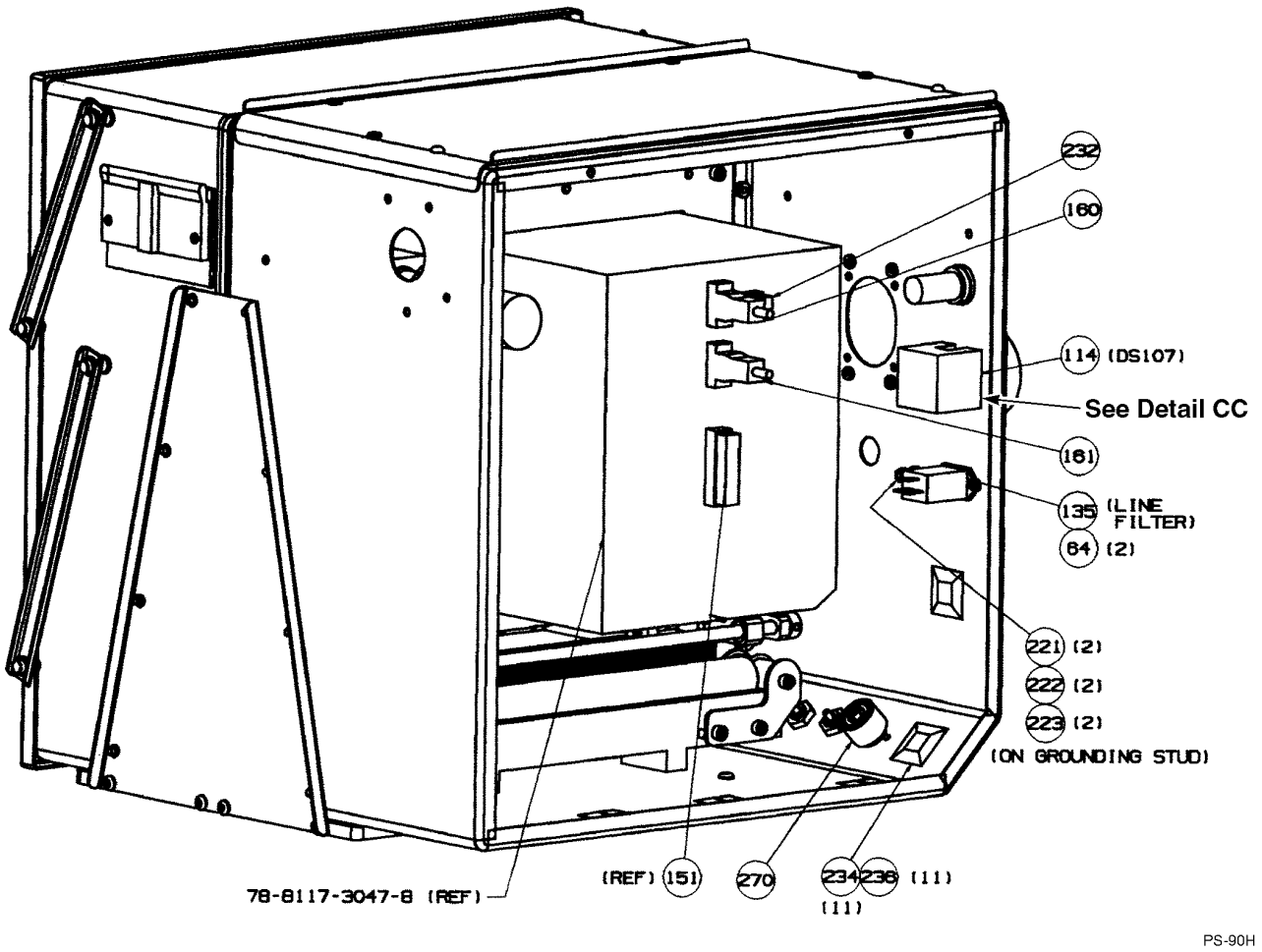


Figure 8-3. Machine Assembly 3

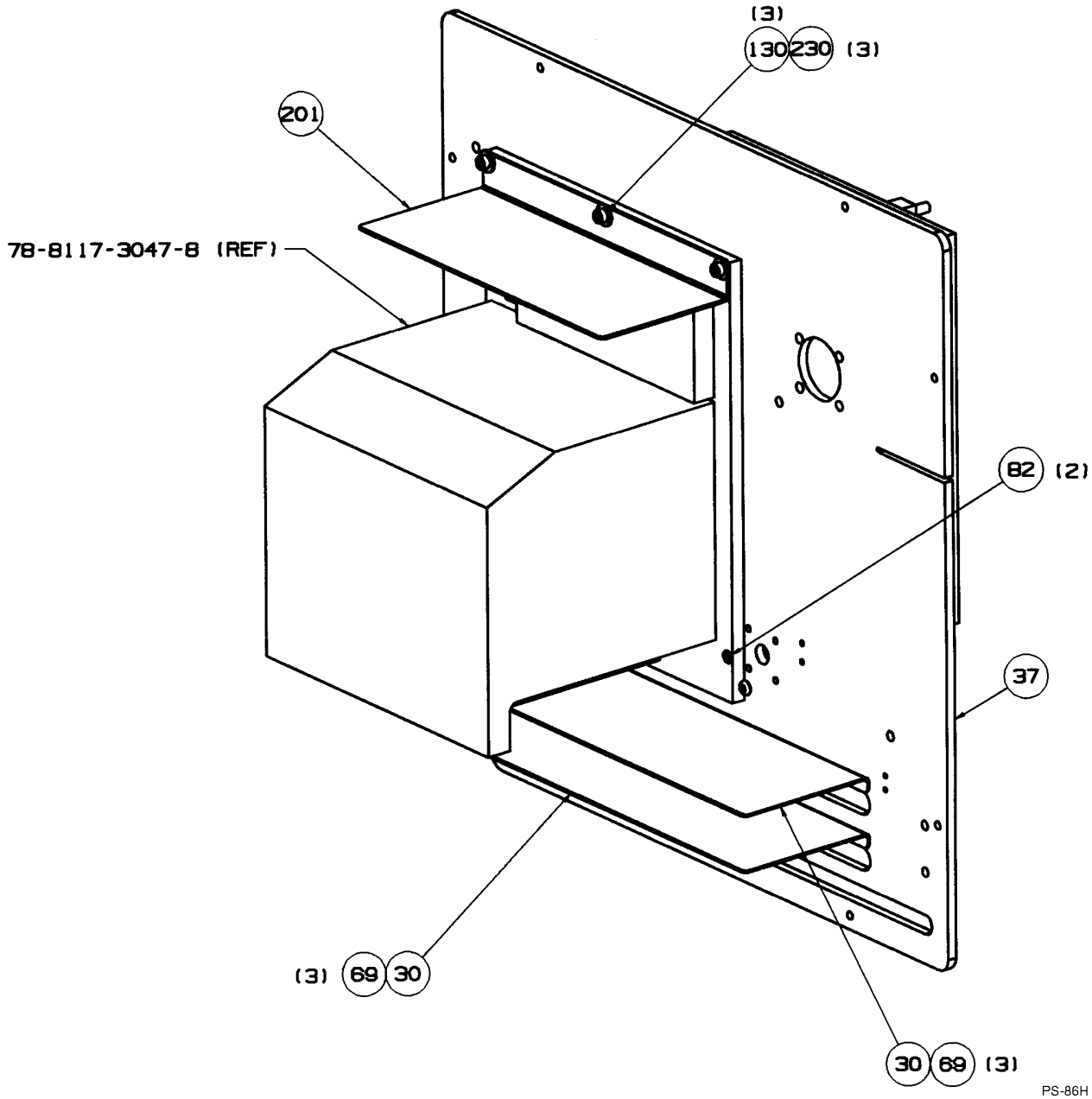


Figure 8-4. Machine Assembly 4

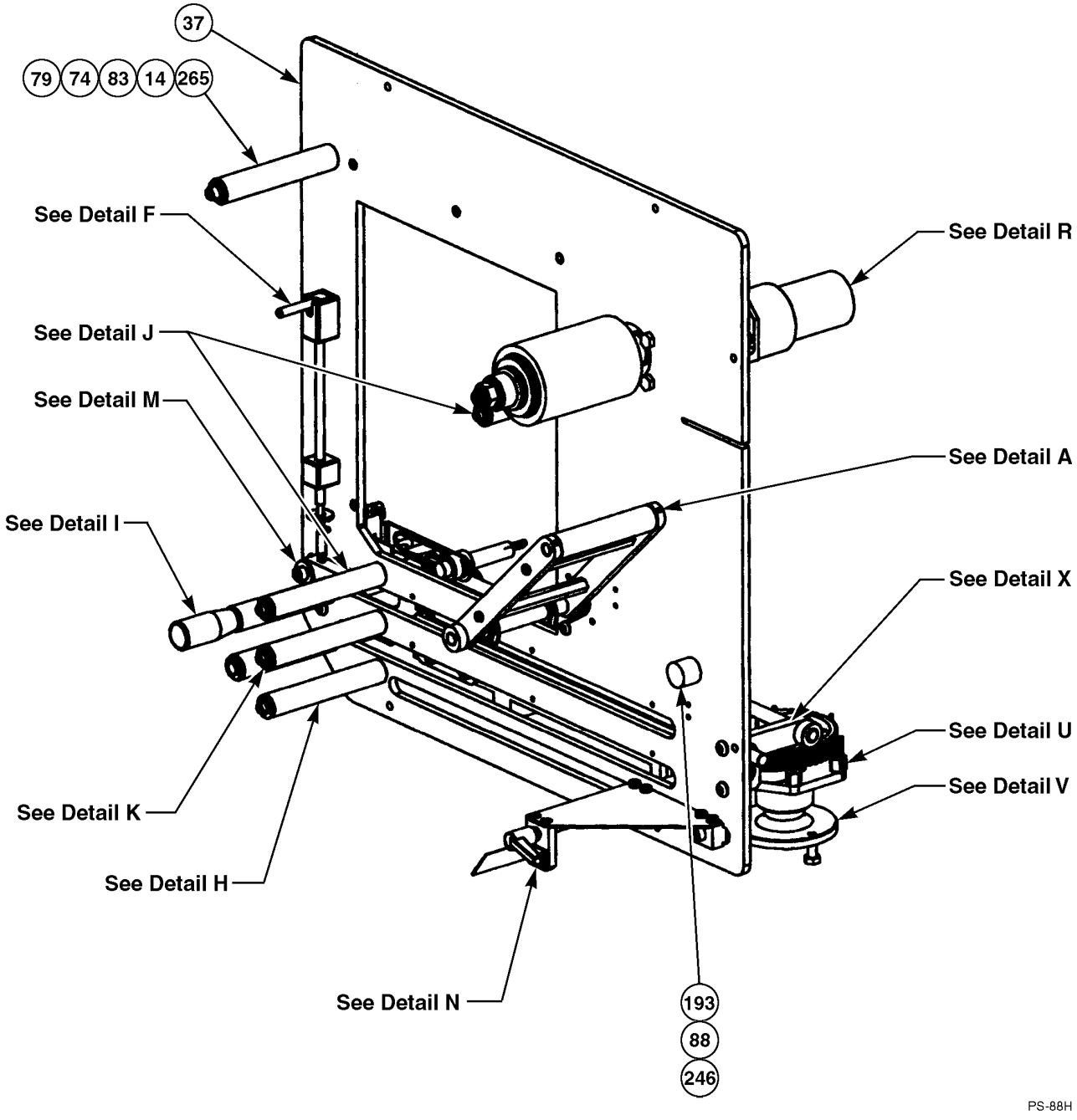


Figure 8-5. Machine Assembly 5

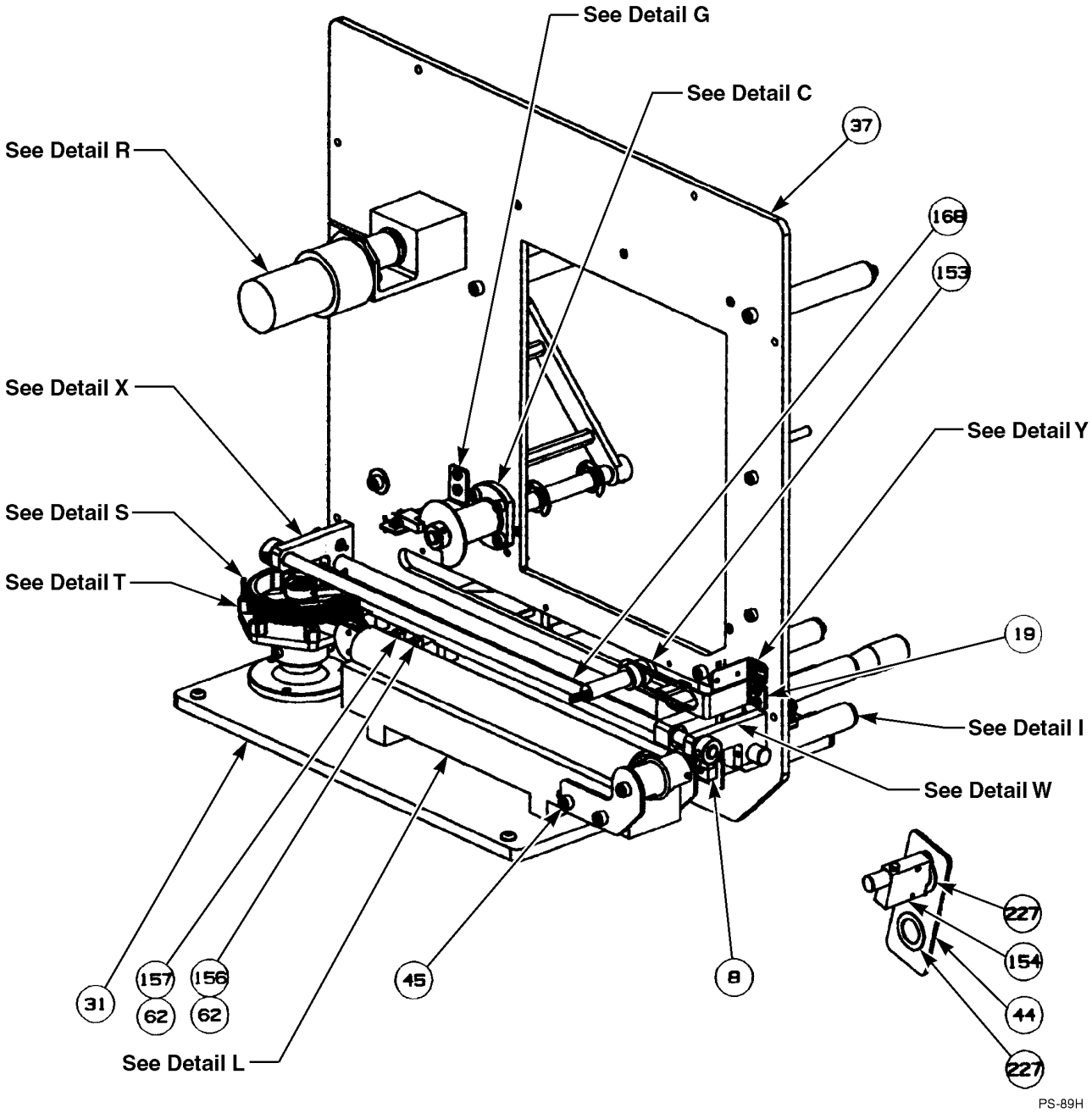


Figure 8-6. Machine Assembly 6

Item Number	Part Number	Description	Qty
1	78-8123-6179-4	LENGTH SENSOR ASSEMBLY R/H	1
	78-8123-1150-0	LENGTH SENSOR ASSEMBLY L/H	1
2	78-8123-1149-2	SENSOR FLAG	1
3	78-8123-1151-8	GASKET, Tape Door	2
4	78-8123-1305-0	TAPE DOOR, Painted	2
	78-8123-1152-6	TAPE DOOR, Stainless	2
5	78-8123-1306-8	SPACER, Tape Door, Painted	2
	78-8123-1153-4	SPACER, Tape Door, Stainless	2
6	78-8123-1339-9	SPACER, Bearing	1
7	78-8123-1340-7	WHEEL, Belt	1
8	78-8123-1368-8	EXTENSION, Dancer	1
9	78-8123-1369-6	ROD, Front Dancer	1
10	78-8123-1370-4	ROD, Back Dancer	1
11	78-8123-1159-1	SHAFT, Entry Roller	1
12	78-8123-1337-3	BRACKET, Dancer Rod, Right	1
13	78-8123-1367-0	ROLLER, Exit	1
14	78-8123-1328-2	SHAFT, Idler	4
15	78-8123-1163-3	ROLLER, Idler, Knurled	3
16	78-8123-1164-1	ROLLER, Dancer	2
17	78-8123-1319-1	SHAFT, Dancer	1
18	78-8123-1334-0	SHAFT, Idler Roller, Hardened	1
19	78-8123-1167-4	BASE, Dancer	1
20	78-8123-1341-5	PLATE, Guide	1
21	78-8123-1335-7	BOSS, Guide Plate	1
22	78-8123-1308-4	LINK, Top Door, Painted	2
	78-8123-1171-6	LINK, Top Door, Stainless	2
23	78-8123-1172-4	BRACKET, Limit Sensor	1
24	78-8123-1309-2	BRACKET, Roller, Painted	1
	78-8123-1173-2	BRACKET, Roller, Stainless	1
25	78-8123-1310-0	LINK, Bottom Door, Painted	2
	78-8123-1174-0	LINK, Bottom Door, Stainless	2
26	78-8123-1175-7	ROLLER, Pre-Strip	1
27	78-8123-1343-1	POST, Guide	6
29	78-8123-1178-1	HOUSING, Roller	1
30	78-8123-1179-9	SEPARATOR, Tape	2
31	78-8123-1180-7	PLATE, Base	1

Item Number	Part Number	Description	Qty
32	78-8123-1181-5	GASKET, Rear	1
33	78-8123-6335-2	ENCLOSURE, Door, R/H, Painted	1
	78-8123-6188-5	ENCLOSURE, Door, R/H, Stainless	1
	78-8123-1311-8	ENCLOSURE, Door, L/H, Painted	1
	78-8123-1182-3	ENCLOSURE, Door, L/H, Stainless	1
34	78-8123-1312-6	ENCLOSURE, Brace, Painted	1
	78-8123-1184-9	ENCLOSURE, Brace, Stainless	1
35	78-8123-1185-6	WINDOW, Door	1
36	78-8123-6336-0	ENCLOSURE, Back Panel, R/H, Painted	1
	78-8123-6187-7	ENCLOSURE, Back Panel, R/H, Stainless	1
	78-8123-1313-4	ENCLOSURE, Back Panel, L/H, Painted	1
	78-8123-1186-4	ENCLOSURE, Back Panel, L/H, Stainless	1
37	78-8123-1188-0	PLATE, Back	1
38	78-8123-1189-8	GASKET, Door	1
39	78-8123-6190-1	ENCLOSURE, Front, R/H, Painted	1
	78-8123-6185-1	ENCLOSURE, Front, R/H, Stainless	1
	78-8123-1314-2	ENCLOSURE, Front, L/H, Painted	1
	78-8123-1190-6	ENCLOSURE, Front, L/H, Stainless	1
40	78-8123-6191-9	ENCLOSURE, Back, R/H, Painted	1
	78-8123-6186-9	ENCLOSURE, Back, R/H, Stainless	1
	78-8123-1315-9	ENCLOSURE, Back, L/H, Painted	1
	78-8123-1192-2	ENCLOSURE, Back, L/H, Stainless	1
41	78-8123-1316-7	ELECTRICAL PANEL, Painted	1
	78-8123-1194-8	ELECTRICAL PANEL, Stainless	1
42	78-8123-1317-5	COVER, Electrical Panel, Painted	1
	78-8123-1195-5	COVER, Electrical Panel, Stainless	1
43	78-8123-1196-3	GASKET, Electrical Panel	1
44	78-8123-1197-1	BRACKET, Tape Low Sensor	1
45	78-8123-1333-2	SPRING, Adjust	1
46	26-1014-8721-8	BEARING, Flanged, M250, 6 ID x 10 OD x 4 mm Lg	8
47	26-1014-8722-6	BEARING, Flanged, M250, 6 ID x 10 OD x 10 mm Lg	4
49	78-8123-6182-8	PLATE, Nut Spring Adjust, R/H	1
	78-8123-1331-6	PLATE, Nut Spring Adjust, L/H	1
50	26-1014-8725-9	BEARING, Thrust, 1/4 in ID x 5/8 in OD x 3/32 in Thick	4
51	26-1014-8726-7	HANDLE, Round, Stainless	1
52	78-8003-7899-0	BEARING, Flanged, 5/8 in ID x 3/4 in OD x 1/2 in Lg	2
53	78-8123-1332-4	POST, Spring Adjust	1
54	26-1014-9079-0	HINGE, Detented	2
55	78-8123-1338-1	CRADLE, Spring	1

Item Number	Part Number	Description	Qty
57	78-8161-8102-4	BEARING, 3/8 in ID x 1/2 in OD x 1/2 in Lg	1
58	78-8161-4227-3	BEARING, Flanged, 3/8 in ID x 1/2 in OD x 1/2 in Lg	1
59	78-8163-0112-7	BEARING, Thrust, 3/8 in ID x 3/4 in OD x 1/16 in Thick	1
60	26-1014-8858-8	MARKER STRIP, Allen Bradley, 1-10	1
61	26-1014-8859-6	MARKER STRIP, Allen Bradley, 11-20	1
62	26-1014-8890-1	SCREW, Machine, Pan Hd. Phil., M3 x 6 mm Lg	10
63	78-8656-4003-7	E-RING, Retaining, 3/8 in, Waldes Truarc #5133-37	6
64	26-1014-8891-9	SCREW, Machine, Flat Hd. Phil., M3 x 6 mm Lg	2
66	26-1014-8892-7	SCREW, Machine, Flat Hd. Phil., M3 x 12 mm Lg	2
67	26-1014-8893-5	SCREW, Set, Hex Soc. Dr. Cup Pt., M4 x 5 mm Lg	6
68	26-1014-8744-0	SCREW, Cap, Soc. Hd. Hex, M4 x 10 mm Lg	1
69	26-1014-8916-4	SCREW, Machine, Pan Hd. Phil., M4 x 8 mm Lg	16
70	26-1014-8894-3	SCREW, Machine, Pan Hd. Phil., M4 x 12 mm Lg	20
71	26-1014-8747-3	WASHER, Flat, M4	28
72	26-1014-8895-0	SCREW, Machine, Button Hd. Hex., M4 x 12 mm Lg	4
73	26-1014-8896-8	SCREW, Machine, Flat Hd. Phil., M4 x 12 mm Lg	2
74	26-1014-8750-7	SCREW, Cap, Soc. Hd. Hex, M5 x 10 mm Lg	8
75	26-1014-8897-6	NUT, Lock, Hex, M4	18
76	26-1014-8898-4	SCREW, Machine, Button Hd. Hex, M5 x 8 mm Lg	12
77	26-1014-8899-2	SCREW, Machine, Pan Hd. Phil, M5 x 8 mm Lg	8
78	26-1014-8860-4	SCREW, Machine, Button Hd. Hex, M5 x 10 mm Lg	1
79	26-1014-8755-6	SCREW, Machine, Soc. Hd. Hex, M6 x 16 mm Lg	8
80	26-1014-8756-4	SCREW, Machine, Soc. Hd. Hex, M6 x 20 mm Lg	2
81	26-1014-8861-2	SCREW, Machine, Button Hd. Hex, M5 x 12 mm Lg	1
82	26-1014-8862-0	SCREW, Cap, Soc. Hd. Hex, M5 x 12 mm Lg	16
83	26-1014-8759-8	SCREW, Cap, Soc. Hd. Hex, M6 x 100 mm Lg	1
85	26-1014-8987-5	SCREW, Shoulder, M6 x 8, Stainless, M5 x .8 THD, Berg #PZM-20	1
86	26-1014-8864-6	SCREW, Machine, Button Hd. Hex, M6 x 10 mm Lg	8
87	26-1014-8865-3	SCREW, Machine, Hex Hd., M6 x 12 mm Lg	2
88	26-1014-8866-1	SCREW, Cap, Soc. Hd. Hex, M6 x 12 mm Lg	1
89	26-1008-3732-2	SCREW, Machine, Button Hd. Hex, M6 x 12 mm Lg	4
91	78-8123-1346-4	END, Spring	1
92	78-8123-1345-6	END, Spring Grooved	1
93	78-8123-1344-9	SHAFT, Stepped Pulley	1
94	78-8123-1336-5	BASE, Step Pulley	1
95	78-8123-1329-0	SPACER, Thrust	1

Item Number	Part Number	Description	Qty
96	78-8123-1342-3	CLAMP, Timing Belt	1
97	78-8123-1204-5	SHAFT, Pivot	1
98	78-8123-6181-0	SPRING, Torsion, R/H	1
	78-8123-1205-2	SPRING, Torsion, L/H	1
99	78-8123-1206-0	CAM	1
100	78-8123-1207-8	ARM, Dancer	2
101	78-8123-1208-6	SHAFT, Housing Pivot	1
102	78-8123-1209-4	SPACER, Dancer Arm	2
103	78-8123-6183-6	PULLEY, Timing Belt, Large, R/H	1
	78-8123-1347-2	PULLEY, Timing Belt, Large, L/H	1
104	78-8123-1217-7	BRACKET, Sensor	1
105	78-8123-1218-5	SHAFT, Roller	1
106	78-8123-1348-0	PULLEY, Timing Belt, Small	1
108	78-8123-1392-8	RAIL, Din	2
109	78-8123-1394-4	GUIDE, Wire	2
110	78-8123-1393-6	COVER, Wire Guide	2
111	26-1014-6784-8	POWER SUPPLY, Omron S82K-1024	1
114	26-1014-6778-0	ACTUATOR, Allen Bradley 194L-E12-1752	1
115	26-1014-6779-8	ACTUATOR, Allen Bradley 194L-HE6G-175	1
116	26-1014-6917-4	PILOT LIGHT, Allen Bradley 800EP-PLM1D3	1
117	78-8005-9890-2	RESISTOR, 4.7K Ohms, 1/4 Watt, 5%, Carbon Film	8
119	26-1014-8773-9	ENCLOSURE, Allen Bradley, 800E-2P	1
120	26-1014-8148-4	Allen Bradley, 1492-WD4C	10
123	26-1014-8911-5	TERMINAL BLOCK, Allen Bradley, 1492-W4P	8
124	26-1014-8912-3	COMPONENT PLUG, Allen Bradley, 1492-CP4	8
126	26-1014-6808-5	E-STOP, Allen Bradley, 800EM-MTS44	1
127	26-1014-6802-8	PUSH BUTTON, Allen Bradley, 800EP-F6	1
128	26-1014-6806-9	CONTACT BLOCK, Allen Bradley, 800E-3LX01	1
129	26-1014-6807-7	CONTACT BLOCK, Allen Bradley, 800E-3LX20	1
130	26-1014-8751-5	SCREW, Cap, Soc. Hd. Hex, M5 x 20 mm Lg.	3
131	26-1014-6789-7	RELAY, Omron, LY2-DC24	1
132	26-1014-6790-5	SOCKET, Relay, Omron, PTF-08A-E	1
133	26-1014-6795-4	FUSE, Slow Blow, 1.25 Amp, 5 x 20 mm, Littlefuse 2181.25	1
134	26-1014-6788-9	TERMINAL, Ground, Specher and Schuh VUPE4-6	3
135	26-1014-6848-1	FILTER, Power Line, Schafner FN92222-12/06	1
136	26-1014-8478-5	CONTACTOR, Allen Bradley 100-M05NZ243	1
137	26-1014-8780-4	CIRCUIT BREAKER, Allen Bradley 1492-GH020	1
138	26-1014-6786-3	CIRCUIT BREAKER, 8 Amp, Telemecanique GB2CB14	2
139	26-1014-6845-7	CIRCUIT BREAKER, 12 Amp, Telemecanique GB2CB20	2

Item Number	Part Number	Description	Qty
140	26-1014-6787-1	FUSE HOLDER, Weidmueller 101100	1
141	26-1014-8782-0	BRACKET, Light Pole, Patlite SZ-017	1
142	26-1014-8783-8	ADAPTER, Patlite SZ-903	1
143	26-1014-8243-3	RELAY, Din Mount, Weidmueller 7901620000	4
144	26-1014-8458-7	PLATE, End, Weidmueller C9039986	1
145	26-1014-8786-1	STOP, End, Altech 2005.2	6
148	78-8123-0289-7	STACKLIGHT ASSEMBLY	1
149	78-8123-1349-8	MOTOR ASSEMBLY, Pre-Strip	1
150	78-8123-1350-6	CABLE ASSEMBLY, E-Stop/Reset	1
151	78-8123-1353-0	CABLE, Printer Assembly	1
153	78-8123-1290-4	PROX. SWITCH ASSEMBLY, PXS312	1
154	78-8123-0328-3	PHOTOCELL ASSEMBLY, PHC314	1
155	78-8123-0329-1	PHOTOCELL ASSEMBLY, PHC316	1
156	78-8123-0331-7	PHOTOCELL ASSEMBLY, PHC318	1
157	78-8123-1291-2	PHOTOCELL ASSEMBLY, PHC320	1
158	78-8123-1292-0	PHOTOCELL ASSEMBLY, PHC336	1
160	78-8123-1295-3	PE CABLE ASSEMBLY, Applicator	1
161	78-8123-1296-1	PE CABLE ASSEMBLY, Options	1
162	78-8123-1351-4	PLC ASSEMBLY	1
163	78-8123-1364-7	CLAMP, Timing Belt Pulley	1
164	26-1008-5406-1	COLLAR, Set, 3/8 in ID, Boston #SC37	2
165	26-1014-8371-2	E-RING, Retaining, 5/8 in, Waldes Truarc #5133-62-ZF	1
166	78-8123-1380-3	COUPLING, Pre-strip Roller	1
167	78-8123-1381-1	BELT, Spring Timing	1
168	78-8123-1382-9	BELT, Dancer Timing	1
169	26-1014-8867-9	SCREW, Machine, Hex Hd., M6 x 16 mm Lg	3
170	26-1014-8868-7	SCREW, Machine, Button Hd. Hex., M6 x 16 mm Lg	3
171	26-1014-8869-5	SCREW, Set, Hex Soc Dr., Cup Pt., M6 x 16 mm Lg	1
173	26-1014-9639-1	SCREW, Set, Hex Soc Dr., Cup Pt., M6 x 40 mm Lg	2
174	26-1014-8871-1	SCREW, Cap, Soc. Hd. Hex, M6 x 60 mm Lg.	3
176	26-1014-8872-9	SCREW, Machine, Pan Hd. Phil., 4-40 UNC x 3/8 in Lg	2
178	26-1014-8983-4	NUT, Hex, 8-32 UNC	2
181	26-1014-8849-7	SPRING, Music Wire, Associated #E-1250-115-7500	1
182	26-1014-8919-8	SHOCK ABSORBER W/NUT, Enidine #TK21-1	1
183	12-7995-5379-2	BEARING, Ball, 3/8 in ID, W/2 Shields, Flanged, Fafnir #FS3KDD	1
184	78-8005-1189-7	BEARING, Ball, 3/8 in ID, W/2 Shields, Fafnir #S3KDD	1
185	26-1014-8841-4	ROLLPIN, 3/32 in Dia. x 1.25 in Lg, Stainless	6
186	26-1014-8840-6	ROLLPIN, 3/32 in Dia. x .625 in Lg, Stainless	6
187	78-8000-8613-0	CLUTCH, One-Way, 1/4 in ID, Torrington #RC-040708	1

Item Number	Part Number	Description	Qty
189	26-1014-8842-2	BEARING, 3/8 in ID, Pacific #PS0610-4	1
190	26-1014-8844-8	3M “BUMPON”, Transparent, #SJ-5306	3
191	26-1014-9331-5	SPRING, Music Wire, ZN PL, Century #5275	1
192	26-1008-9181-6	POST, Spring, #8-32, Century Spring #CSA-60	3
193	26-1014-8845-5	BUMPER, McMaster-Carr #9546K214	1
194	26-1014-8846-3	SCREW, Shoulder, M5 x .8, 6 Dia x 6 mm, Stainless, Berg #PZM-19	4
195	26-1014-8847-1	SCREW, Shoulder, M5 x .8, 6 Dia x 14 mm, Stainless, Berg #PZM-23	4
196	26-1014-8848-9	WASHER, .5 OD x .2 ID x .062 Thick, 316 Stainless, Boker’s	8
197	26-1014-8854-7	COVER, Weathertite GFI Outlet, Mason #C305	1
198	78-8123-1396-9	BRACKET, Dancer Rod, Left	1
199	26-1014-8883-6	SCREW, Machine, Hex Hd., M5 x 10 mm Lg	1
201	78-8123-1398-5	SHELF	1
203	78-8123-1408-2	SHAFT, Dancer Extended	1
206	26-1014-8874-5	SCREW, Cap, Soc. Hd. Hex, 10-32 x 1/2 in Lg	2
209	78-8123-1412-4	BRACKET, Thread Sensor	1
210	78-8123-1445-4	STOP, Spring	1
211	78-8123-1453-8	CLAMP, Large Pulley	1
213	78-8656-3969-0	RING, Retaining, 3/8 in, 5100 Series Waldes Truarc #5100-37	1
215	78-8123-0250-9	DIODE ASSEMBLY	2
216	26-1014-8063-5	SUPPRESSOR, Surge, Allen Bradley 199-FSMZ-1	1
217	26-1014-8971-9	SUPPRESSOR, Surge, Allen Bradley 199-MSMD1	1
218	78-8123-1465-2	PHOTOCELL ASSEMBLY, PHC 340	1
221	26-1014-8984-2	NUT, Hex, M5, 18-8 Stainless	3
222	26-1010-1204-0	WASHER, Regular Spring, M5, 18-8 Stainless	2
223	26-1014-8985-9	WASHER, Lock, Serrated, External Tooth, M5, 18-8 Stainless	2
224	26-1014-8988-3	FITTING, Straight Thru, Heyco Liquid Tight #3208	4
225	26-1011-9488-9	FITTING, Straight Thru, Heyco Liquid Tight #3217	2
226	18-9221-6675-8	DOWEL PIN, 3/16 in Dia x 1.5 in Lg, Stainless Steel	2
227	26-1014-8129-4	SHIM, Steel, .75 in x 1.125 in OD x .031 in Thick, McMaster-Carr #3088A434	2
228	78-8002-4779-9	CLUTCH, One-Way, 3/8 in ID x 5/8 in OD x 7/8 in Lg, Torrington #RCB-061014	1
229	26-1014-8210-2	BLOCK, Terminal, Allen Bradley #1492-WD4	2
230	78-8005-9760-7	WASHER, Flat, #10, Stainless	3
231	26-1014-9080-8	SCREW, Machine, Pan Hd. Phil., M4 x 6 mm Lg	4
232	78-8123-5853-5	CABLE, Extension	1

Item Number	Part Number	Description	Qty
233	26-1008-0204-5	GROMMET, Extended, Natural Nylon, 13 in Lg, Catamount GRNY-085-9-C	A/R
234	26-1014-9108-7	BASE, Tie-Cable, 3M 06292	11
235	26-1006-9109-5	CLIP, Cable, 3M 707	3
236	26-1006-0931-7	TIE, Cable, 3M 06225	18
237	78-8123-5868-3	SPACER, Dancer Base	1
238	78-8123-5870-9	BLOCK, Top Latch	1
239	78-8123-5871-7	BLOCK, Bottom Latch	1
240	78-8123-5869-1	ROD, Latch	1
241	78-8123-5931-9	LATCH, Dancer	1
242	26-1014-9206-9	SPRING, Extension, .250 in OD x 1.03 in Lg, .021 Dia Music Wire, Century Spring Corp #223-38	1
243	26-1014-9205-1	HANDLE, Plastic, JW Winco Inc #6139006	1
244	78-8014-0988-5	BUSHING, Sleeve, Oilite #AA-307-10	1
245	26-1014-9208-5	SCREW, Cap, Soc. Hd. Hex, M6 x 30 mm Lg	1
246	26-1014-8762-2	WASHER, Flat Plain, M6	2
247	26-1014-9204-4	BUSHING, Ball, .5 in ID x .875 in OD x 1.25, Thompson #A-81420	2
248	78-8656-3667-0	RING, Retaining, 7/8 in, “N” Series, Waldes Truarc #N5000-87	2
249	26-1014-9203-6	SCREW, Set, Nylon, 8-32 x 1/4 in Lg	2
250	26-1014-9046-9	PLATE, Partition, Allen Bradley #1492-PPD3	3
252	60-9800-2822-3	GASKET, Sealant #2, Non-Hardening, 3M #08721	A/R
253	26-1014-9218-4	PARTITION, Plate, Allen Bradley #1492-PP3	1
254	26-1014-9236-6	SCREW, Machine, Pan Hd. Phil., M3 x 16 mm Lg	2
256	26-1014-9235-8	SCREW, Machine, Pan Hd. Phil., 8-32 x 3/4 in Lg	2
257	26-1006-2560-2	THREADLOCKER, Loctite #242, Removable, 50 ml Bottle, Product #24231	A/R
258	26-0000-4728-3	THREADLOCKER, Loctite #262, Permanent, 50 ml Bottle, Product #26231	A/R
259	62-5250-1609-3	SEALANT, 3M Super Silicone, Clear 3 oz Tube, 3M Catalog #8661	A/R
260	26-1014-9080-8	SCREW, Machine, Pan Hd. Phil., M4 x 6 mm Lg	8
261	78-8123-6341-0	SPRING, Link	1
262	78-8123-6337-8	GUIDE, Tape	4
263	78-8123-6338-6	ROLLER, Entry	2
264	78-8123-6339-4	ROLLER, Dancer, Knurled	1
265	78-8123-6340-2	ROLLER, Idler	1
266	12-7996-1444-6	E-RING, Retaining, 3/4 in, Waldes Truarc #X5133-74	4
268	78-8123-6330-3	PLATE, Label, Stainless Models Only	1

Item Number	Part Number	Description	Qty
269	26-1014-9622-7	RECEPTACLE, Male, 3+PE Screw Termination, Amphenol #T3110000	1
270	26-1014-9624-3	CAP, Protective, Male Receptacle, Amphenol #T6482000	1
271	26-1014-9630-0	SCREW, Pan Hd. Phil., M3 x 10 mm Lg	2
272	26-1014-8741-6	WASHER, Flat, M3	2
273	26-1014-9652-4	RELAY, Solid State, Din-Rail Mount, Crouzet #DR-0DC24	1

This page intentionally left blank.

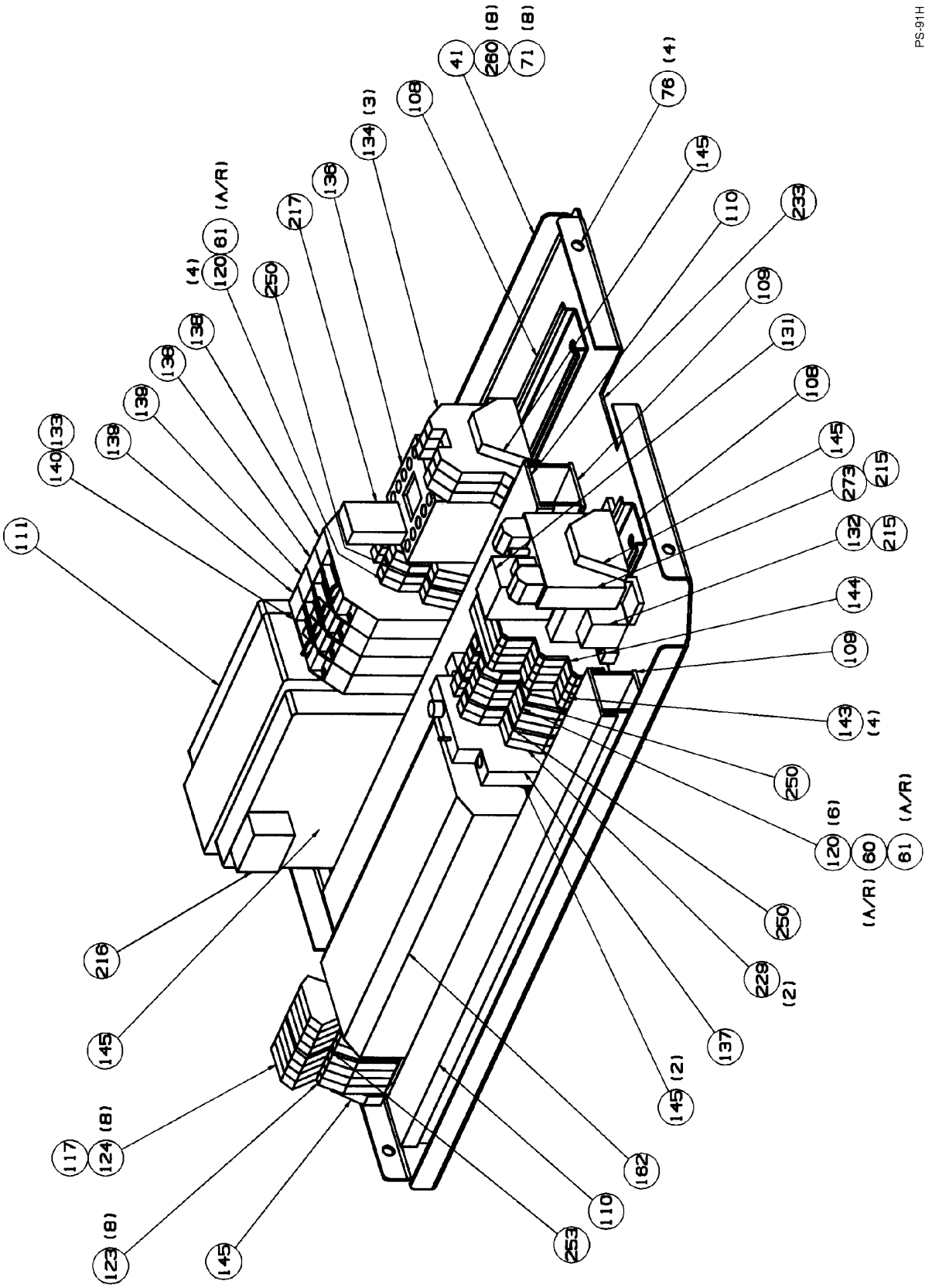


Figure 8-7. Electrical Components

Item Number	Part Number	Description	Qty
41	78-8123-1316-7	ELECTRICAL PANEL, Painted	1
	78-8123-1194-8	ELECTRICAL PANEL, Stainless	1
60	26-1014-8858-8	MARKER STRIP, Allen Bradley, 1-10	1
61	26-1014-8859-6	MARKER STRIP, Allen Bradley, 11-20	1
71	26-1014-8747-3	WASHER, Flat, M4	28
76	26-1014-8898-4	SCREW, Machine, Button Hd. Hex, M5 x 8 mm Lg	12
108	78-8123-1392-8	RAIL, Din	2
109	78-8123-1394-4	GUIDE, Wire	2
110	78-8123-1393-6	COVER, Wire Guide	2
111	26-1014-6784-8	POWER SUPPLY, Omron S82K-1024	1
117	78-8005-9890-2	RESISTOR, 4.7K Ohms, 1/4 Watt, 5%, Carbon Film	8
120	26-1014-8148-4	Allen Bradley, 1492-WD4C	10
123	26-1014-8911-5	TERMINAL BLOCK, Allen Bradley, 1492-W4P	8
124	26-1014-8912-3	COMPONENT PLUG, Allen Bradley, 1492-CP4	8
131	26-1014-6789-7	RELAY, Omron, LY2-DC24	1
132	26-1014-6790-5	SOCKET, Relay, Omron, PTF-08A-E	1
133	26-1014-6795-4	FUSE, Slow Blow, 1.25 Amp, 5 x 20 mm, Littlefuse 2181.25	1
134	26-1014-6788-9	TERMINAL, Ground, Specher and Schuh VUPE4-6	3
136	26-1014-8478-5	CONTACTOR, Allen Bradley 100-M05NZ243	1
137	26-1014-8780-4	CIRCUIT BREAKER, Allen Bradley 1492-GH020	1
138	26-1014-6786-3	CIRCUIT BREAKER, 8 Amp, Telemecanique GB2CB14	2
139	26-1014-6845-7	CIRCUIT BREAKER, 12 Amp, Telemecanique GB2CB20	2
140	26-1014-6787-1	FUSE HOLDER, Weidmueller 101100	1
143	26-1014-8243-3	RELAY, Din Mount, Weidmueller 7901620000	4
144	26-1014-8458-7	PLATE, End, Weidmueller C9039986	1
145	26-1014-8786-1	STOP, End, Altech 2005.2	6
162	78-8123-1351-4	PLC ASSEMBLY	1
215	78-8123-0250-9	DIODE ASSEMBLY	2
216	26-1014-8063-5	SUPPRESSOR, Surge, Allen Bradley 199-FSMZ-1	1
217	26-1014-8971-9	SUPPRESSOR, Surge, Allen Bradley 199-MSMD1	1
229	26-1014-8210-2	BLOCK, Terminal, Allen Bradley #1492-WD4	2
233	26-1008-0204-5	GROMMET, Extended, Natural Nylon, 13 in Lg, Catamount GRNY-085-9-C	A/R
250	26-1014-9046-9	PLATE, Partition, Allen Bradley #1492-PPD3	3
253	26-1014-9218-4	PARTITION, Plate, Allen Bradley #1492-PP3	1
260	26-1014-9080-8	SCREW, Machine, Pan Hd. Phil., M4 x 6 in Lg	8
273	26-1014-9652-4	RELAY, Solid State, Din-Rail Mount, Crouzet #DR-0DC24	1

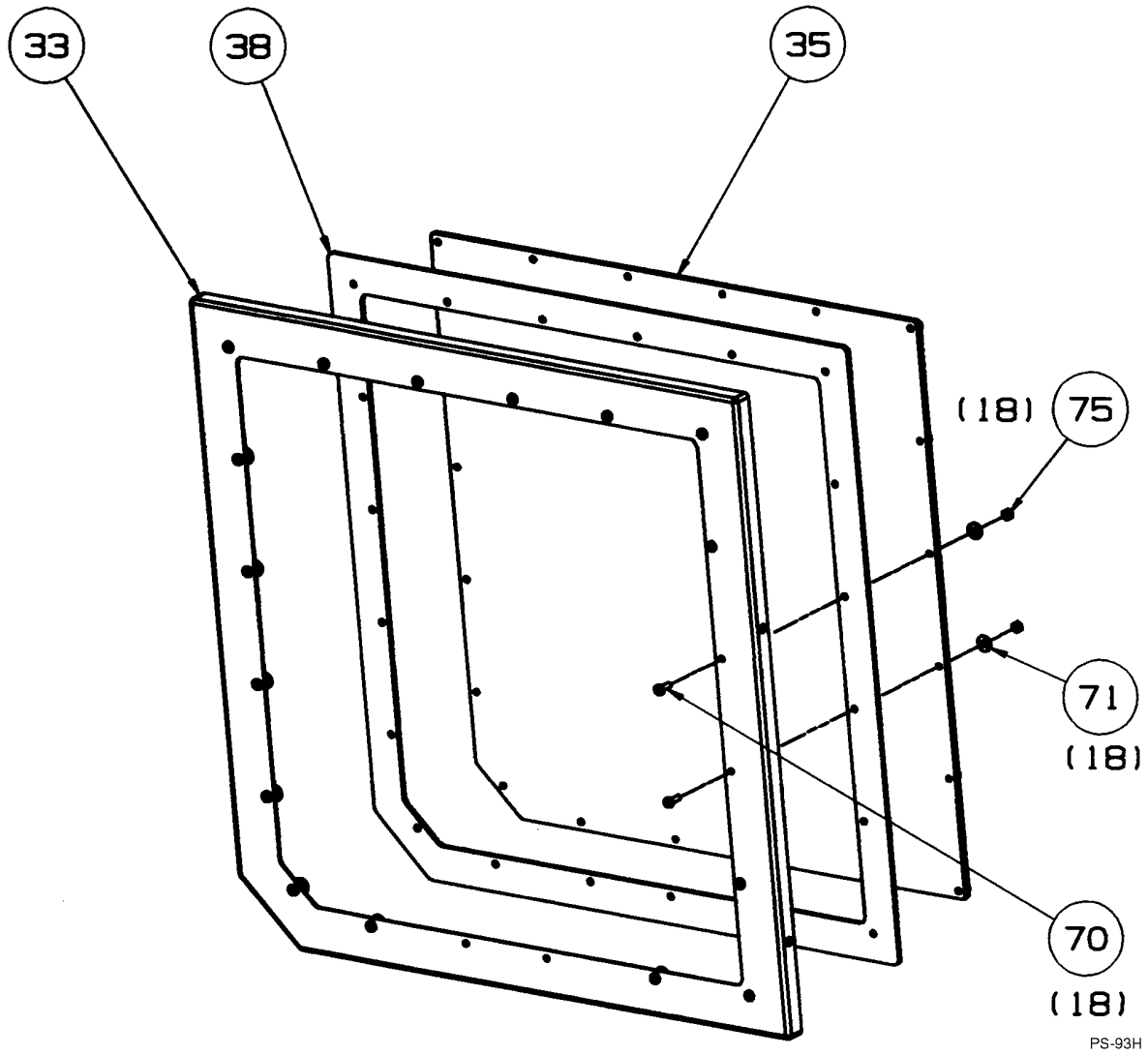


Figure 8-8. Detail AA

Item Number	Part Number	Description	Qty
33	78-8123-6335-2	ENCLOSURE, Door, R/H, Painted	1
	78-8123-6188-5	ENCLOSURE, Door, R/H, Stainless	1
	78-8123-1311-8	ENCLOSURE, Door, L/H, Painted	1
	78-8123-1182-3	ENCLOSURE, Door, L/H, Stainless	1
35	78-8123-1185-6	WINDOW, Door	1
38	78-8123-1189-8	GASKET, Door	1
70	26-1014-8894-3	SCREW, Machine, Pan Hd. Phil., M4 x 12 mm Lg	20
71	26-1014-8747-3	WASHER, Flat, M4	28
75	26-1014-8897-6	NUT, Lock, Hex, M4	18

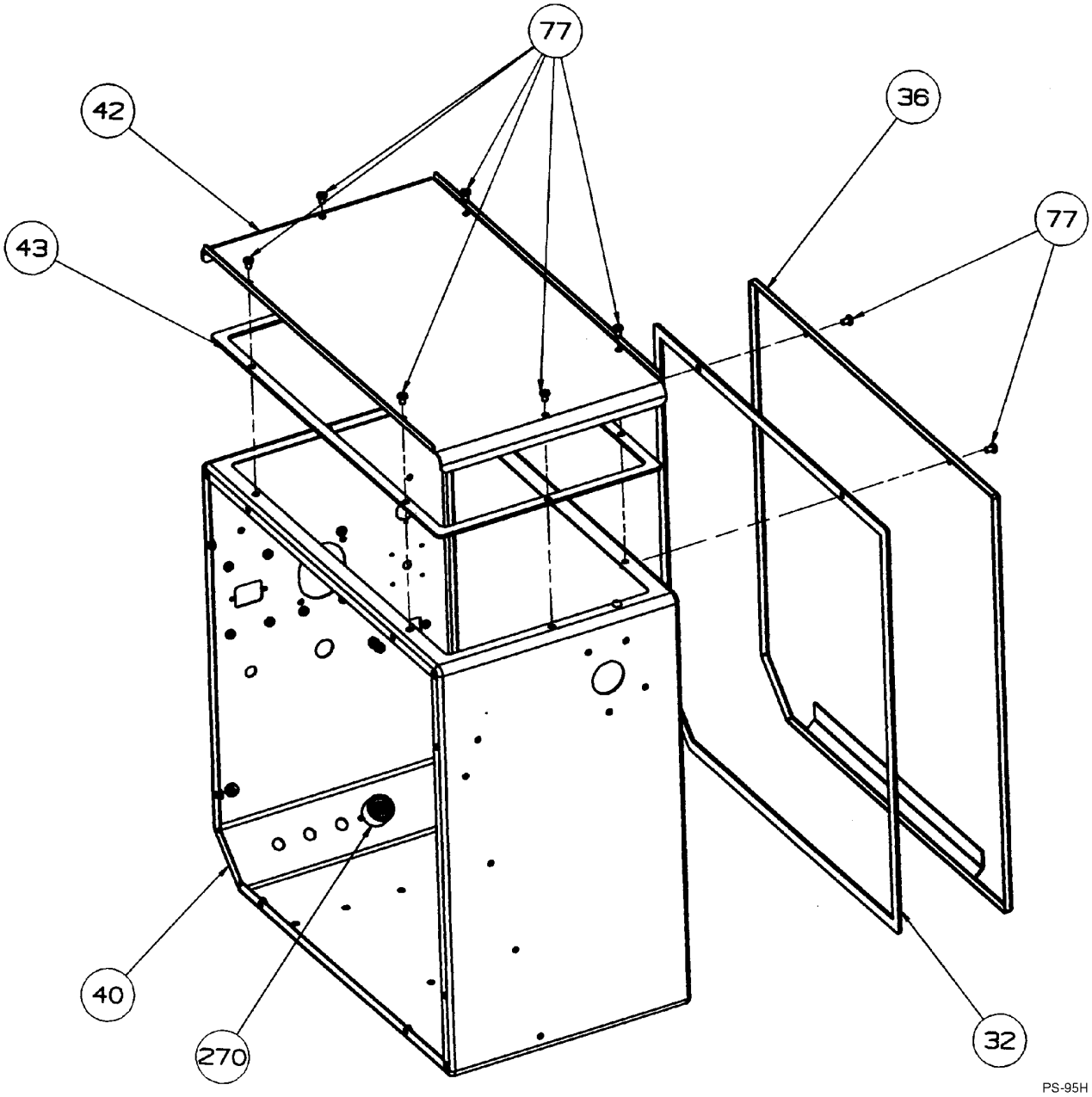


Figure 8-9. Detail BB

Item Number	Part Number	Description	Qty
32	78-8123-1181-5	GASKET, Rear	1
36	78-8123-6336-0	ENCLOSURE, Back Panel, R/H, Painted	1
	78-8123-6187-7	ENCLOSURE, Back Panel, R/H, Stainless	1
	78-8123-1313-4	ENCLOSURE, Back Panel, L/H, Painted	1
	78-8123-1186-4	ENCLOSURE, Back Panel, L/H, Stainless	1
40	78-8123-6191-9	ENCLOSURE, Back, R/H, Painted	1
	78-8123-6186-9	ENCLOSURE, Back, R/H, Stainless	1
	78-8123-1315-9	ENCLOSURE, Back, L/H, Painted	1
	78-8123-1192-2	ENCLOSURE, Back, L/H, Stainless	1
42	78-8123-1317-5	COVER, Electrical Panel, Painted	1
	78-8123-1195-5	COVER, Electrical Panel, Stainless	1
43	78-8123-1196-3	GASKET, Electrical Panel	1
77	26-1014-8899-2	SCREW, Machine, Pan Hd. Phil, M5 x 8 mm Lg	8
270	26-1014-9624-3	CAP, Protective, Male Receptacle, Amphenol #T6482000	1

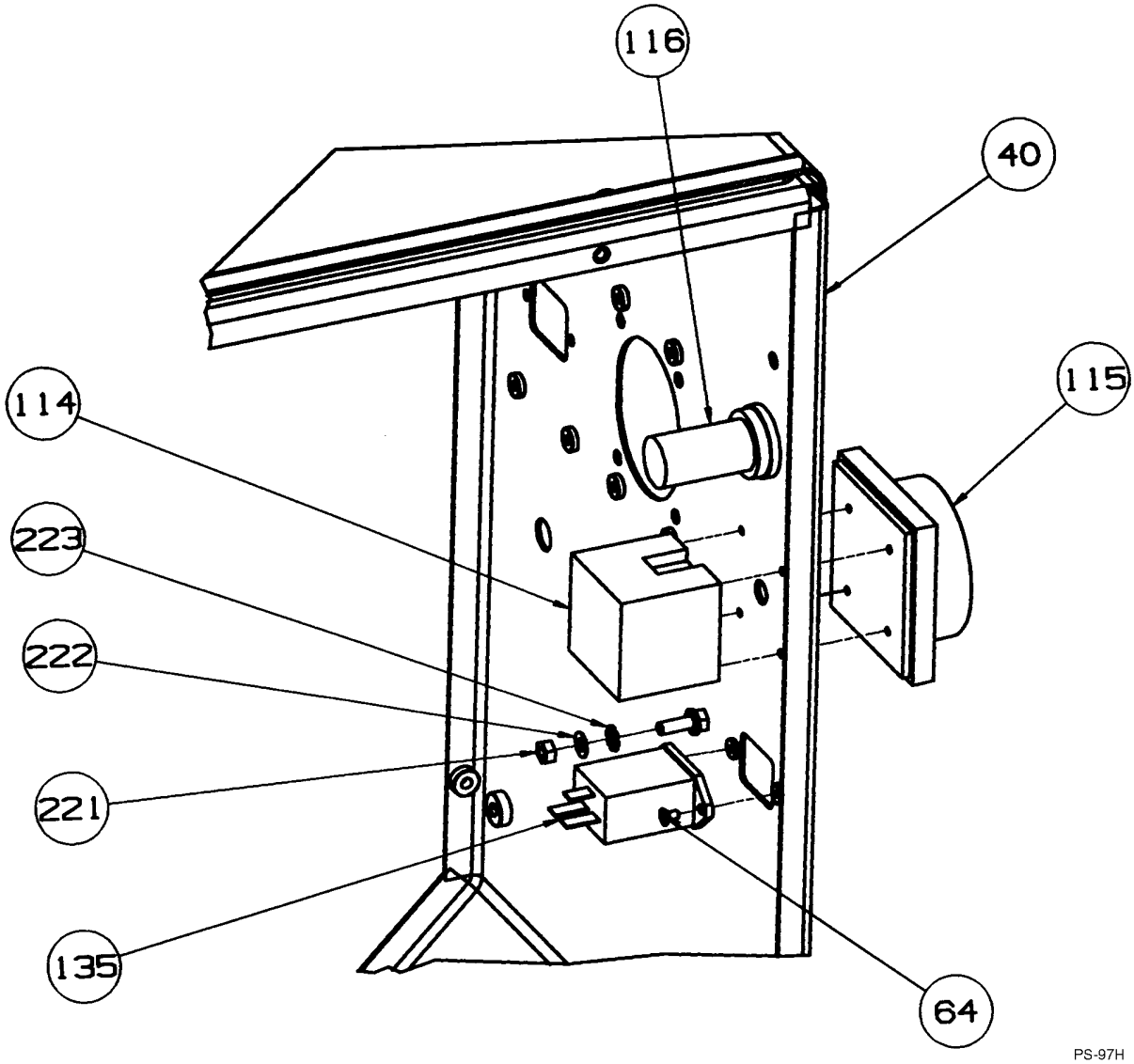


Figure 8-10. Detail CC

Item Number	Part Number	Description	Qty
40	78-8123-6191-9	ENCLOSURE, Back, R/H, Painted	1
	78-8123-6186-9	ENCLOSURE, Back, R/H, Stainless	1
	78-8123-1315-9	ENCLOSURE, Back, L/H, Painted	1
	78-8123-1192-2	ENCLOSURE, Back, L/H, Stainless	1
64	26-1014-8891-9	SCREW, Machine, Flat Hd. Phil., M3 x 6 mm Lg	2
114	26-1014-6778-0	ACTUATOR, Allen Bradley 194L-E12-1752	1
115	26-1014-6779-8	ACTUATOR, Allen Bradley 194L-HE6G-175	1
116	26-1014-6917-4	PILOT LIGHT, Allen Bradley 800EP-PLM1D3	1
135	26-1014-6848-1	FILTER, Power Line, Schafner FN92222-12/06	1
221	26-1014-8984-2	NUT, Hex, M5, 18-8 Stainless	3
222	26-1010-1204-0	WASHER, Regular Spring, M5, 18-8 Stainless	2
223	26-1014-8985-9	WASHER, Lock, Serrated, External Tooth, M5, 18-8 Stainless	2

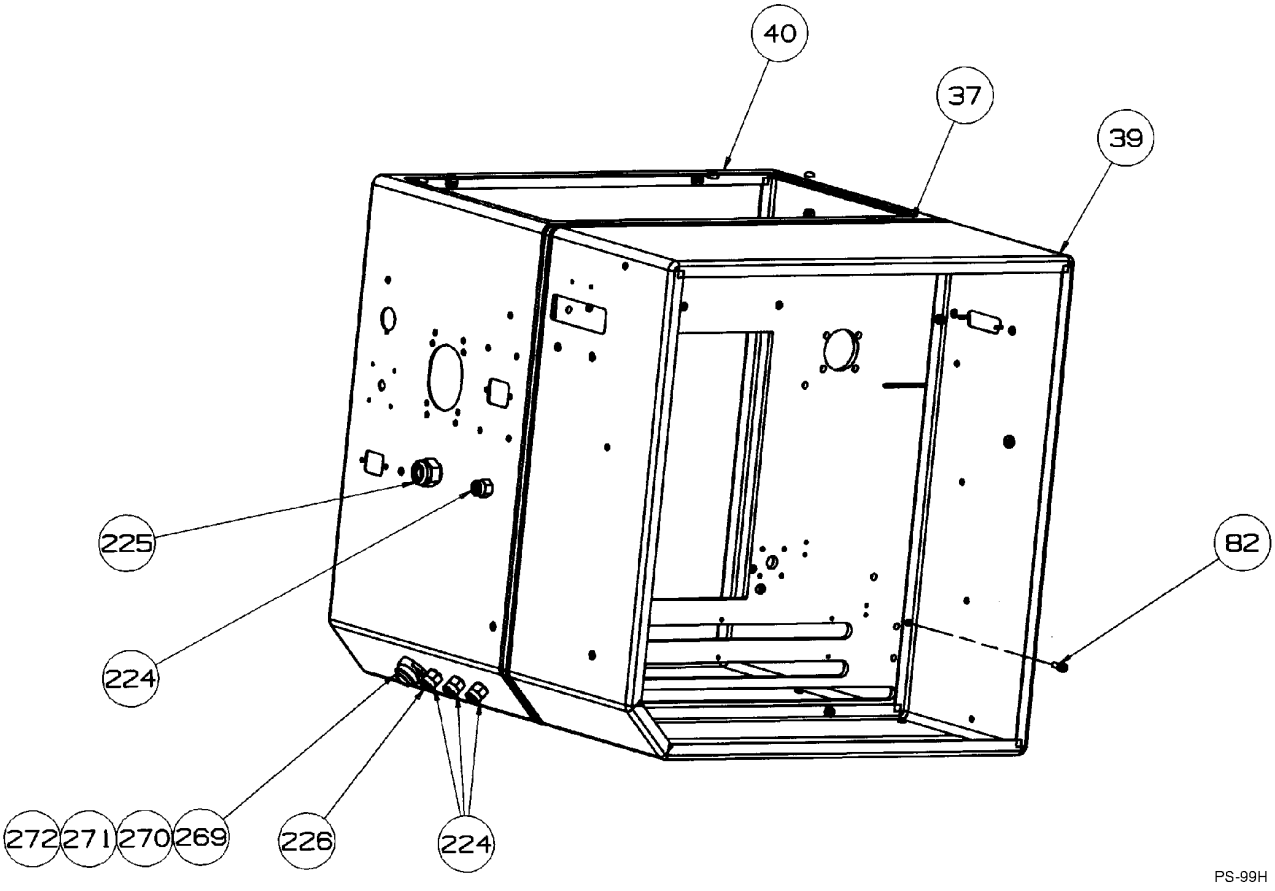


Figure 8-11. Detail DD

Item Number	Part Number	Description	Qty
37	78-8123-1188-0	PLATE, Back	1
39	78-8123-6190-1	ENCLOSURE, Front, R/H, Painted	1
	78-8123-6185-1	ENCLOSURE, Front, R/H, Stainless	1
	78-8123-1314-2	ENCLOSURE, Front, L/H, Painted	1
	78-8123-1190-6	ENCLOSURE, Front, L/H, Stainless	1
40	78-8123-6191-9	ENCLOSURE, Back, R/H, Painted	1
	78-8123-6186-9	ENCLOSURE, Back, R/H, Stainless	1
	78-8123-1315-9	ENCLOSURE, Back, L/H, Painted	1
	78-8123-1192-2	ENCLOSURE, Back, L/H, Stainless	1
82	26-1014-8862-0	SCREW, Cap, Soc. Hd. Hex, M5 x 12 mm Lg	16
224	26-1014-8988-3	FITTING, Straight Thru, Heyco Liquid Tight #3208	4
225	26-1011-9488-9	FITTING, Straight Thru, Heyco Liquid Tight #3217	2
226	18-9221-6675-8	DOWEL PIN, 3/16 in Dia x 1.5 in Lg, Stainless Steel	2
269	26-1014-9622-7	RECEPTACLE, Male, 3+PE Screw Termination, Amphenol #T3110000	1
270	26-1014-9624-3	CAP, Protective, Male Receptacle, Amphenol #T6482000	1
271	26-1014-9630-0	SCREW, Pan Hd. Phil., M3 x 10 mm Lg	2
272	26-1014-8741-6	WASHER, Flat, M3	2

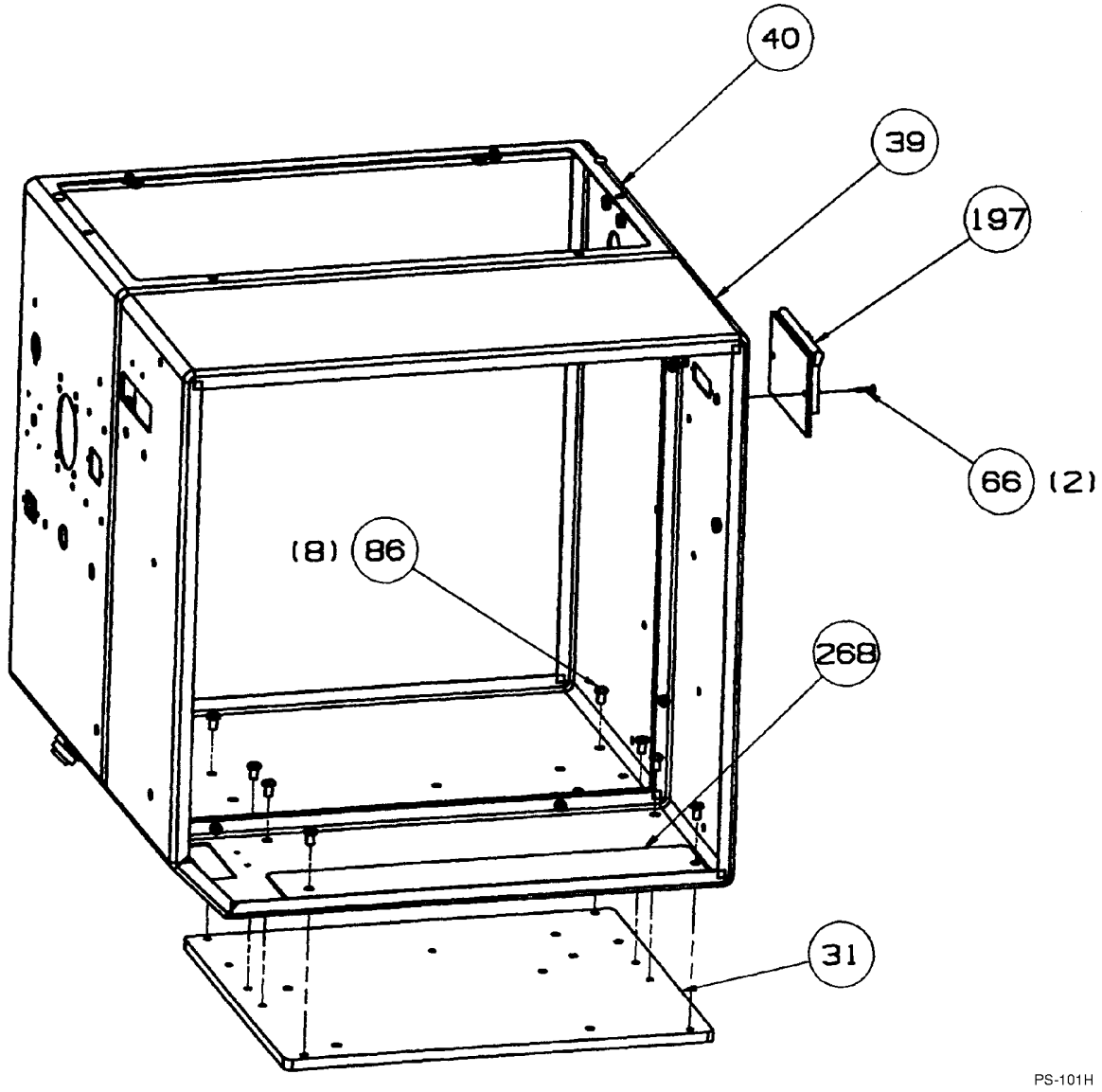


Figure 8-12. Detail EE

Item Number	Part Number	Description	Qty
31	78-8123-1180-7	PLATE, Base	1
39	78-8123-6190-1	ENCLOSURE, Front, R/H, Painted	1
	78-8123-6185-1	ENCLOSURE, Front, R/H, Stainless	1
	78-8123-1314-2	ENCLOSURE, Front, L/H, Painted	1
	78-8123-1190-6	ENCLOSURE, Front, L/H, Stainless	1
40	78-8123-6191-9	ENCLOSURE, Back, R/H, Painted	1
	78-8123-6186-9	ENCLOSURE, Back, R/H, Stainless	1
	78-8123-1315-9	ENCLOSURE, Back, L/H, Painted	1
	78-8123-1192-2	ENCLOSURE, Back, L/H, Stainless	1
66	26-1014-8892-7	SCREW, Machine, Flat Hd. Phil., M3 x 12 mm Lg	2
86	26-1014-8864-6	SCREW, Machine, Button Hd. Hex, M6 x 10 mm Lg	8
197	26-1014-8854-7	COVER, Weathertite GFI Outlet, Mason #C305	1
268	78-8123-6330-3	PLATE, Label, Stainless Models Only	1

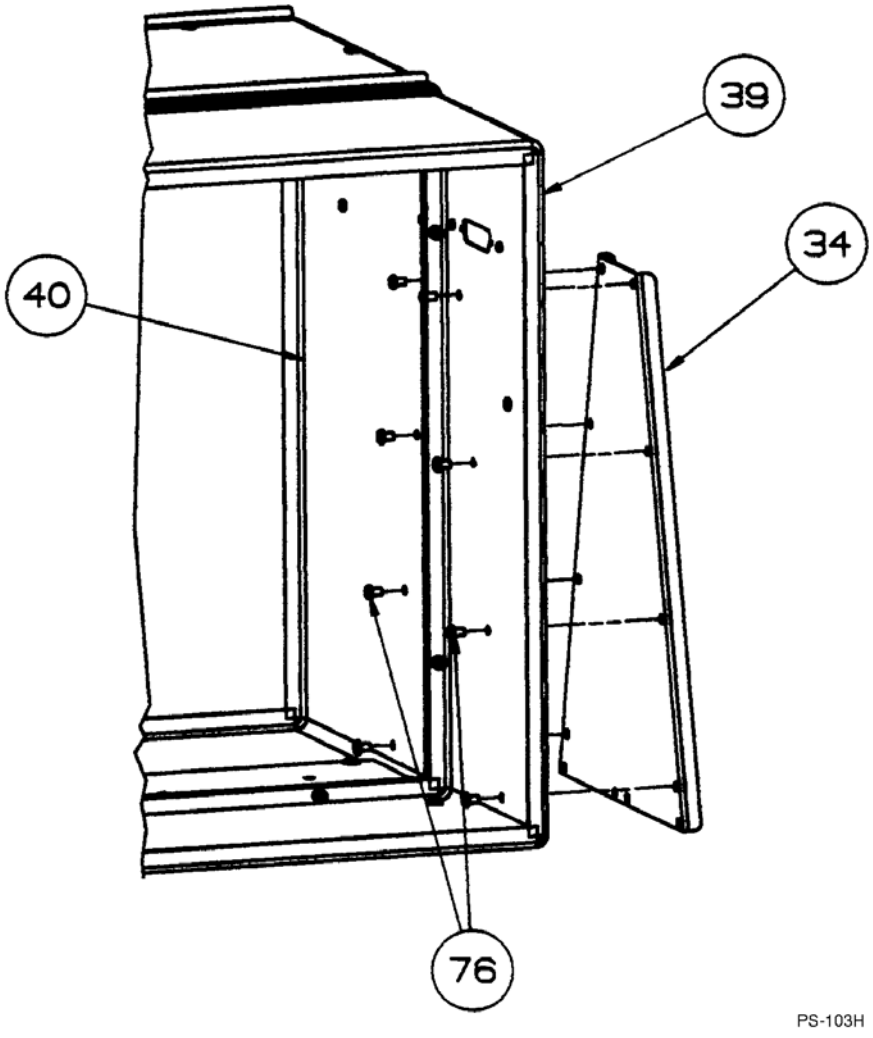


Figure 8-13. Detail FF

Item Number	Part Number	Description	Qty
34	78-8123-1312-6	ENCLOSURE, Brace, Painted	1
	78-8123-1184-9	ENCLOSURE, Brace, Stainless	1
39	78-8123-6190-1	ENCLOSURE, Front, R/H, Painted	1
	78-8123-6185-1	ENCLOSURE, Front, R/H, Stainless	1
	78-8123-1314-2	ENCLOSURE, Front, L/H, Painted	1
	78-8123-1190-6	ENCLOSURE, Front, L/H, Stainless	1
40	78-8123-6191-9	ENCLOSURE, Back, R/H, Painted	1
	78-8123-6186-9	ENCLOSURE, Back, R/H, Stainless	1
	78-8123-1315-9	ENCLOSURE, Back, L/H, Painted	1
	78-8123-1192-2	ENCLOSURE, Back, L/H, Stainless	1
76	26-1014-8898-4	SCREW, Machine, Button Hd. Hex, M5 x 8 mm Lg	12

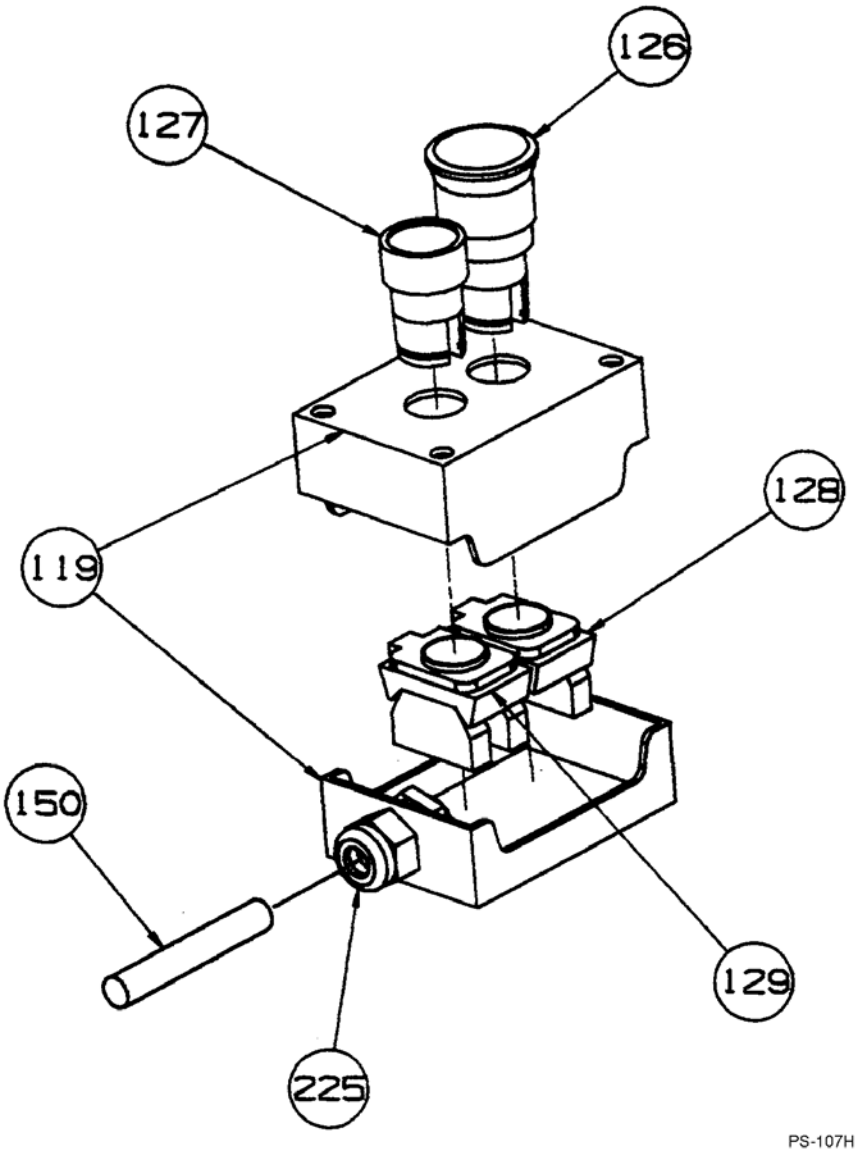


Figure 8-14. Detail HH

Item Number	Part Number	Description	Qty
119	26-1014-8773-9	ENCLOSURE, Allen Bradley, 800E-2P	1
126	26-1014-6808-5	E-STOP, Allen Bradley, 800EM-MTS44	1
127	26-1014-6802-8	PUSH BUTTON, Allen Bradley, 800EP-F6	1
128	26-1014-6806-9	CONTACT BLOCK, Allen Bradley, 800E-3LX01	1
129	26-1014-6807-7	CONTACT BLOCK, Allen Bradley, 800E-3LX20	1
150	78-8123-1350-6	CABLE ASSEMBLY, E-Stop/Reset	1
225	26-1011-9488-9	FITTING, Straight Thru, Heyco Liquid Tight #3217	2

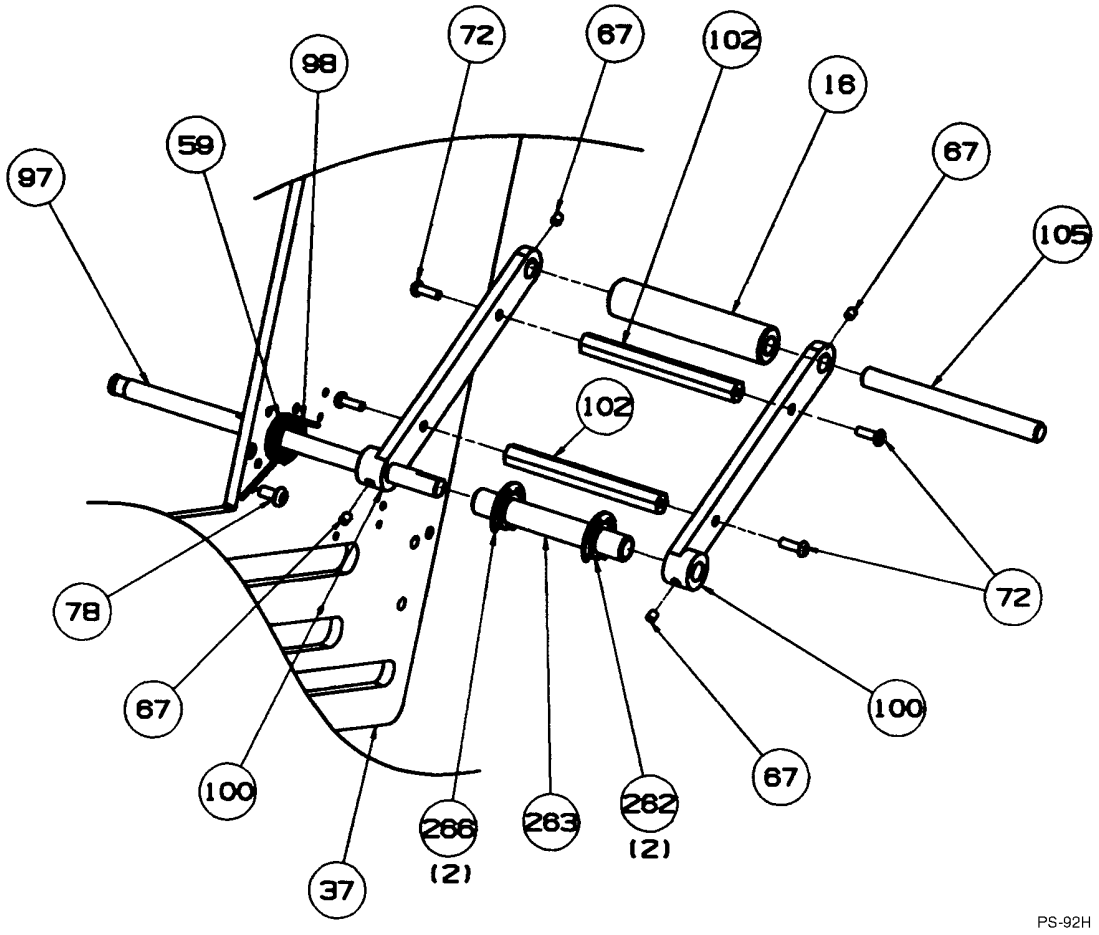


Figure 8-15. Detail A

Item Number	Part Number	Description	Qty
16	78-8123-1164-1	ROLLER, Dancer	2
37	78-8123-1188-0	PLATE, Back	1
59	78-8163-0112-7	BEARING, Thrust, 3/8 in ID x 3/4 in OD x 1/16 in Thick	1
67	26-1014-8893-5	SCREW, Set, Hex Soc. Dr. Cup Pt., M4 x 5 mm Lg	6
72	26-1014-8895-0	SCREW, Machine, Button Hd. Hex., M4 x 12 mm Lg	4
78	26-1014-8860-4	SCREW, Machine, Button Hd. Hex, M5 x 10 mm Lg	1
97	78-8123-1204-5	SHAFT, Pivot	1
98	78-8123-6181-0	SPRING, Torsion, R/H	1
	78-8123-1205-2	SPRING, Torsion, L/H	1
100	78-8123-1207-8	ARM, Dancer	2
102	78-8123-1209-4	SPACER, Dancer Arm	2
105	78-8123-1218-5	SHAFT, Roller	1
262	78-8123-6337-8	GUIDE, Tape	4
263	78-8123-6338-6	ROLLER, Entry	2
266	12-7996-1444-6	E-RING, Retaining, 3/4 in, Waldes Truarc #X5133-74	4

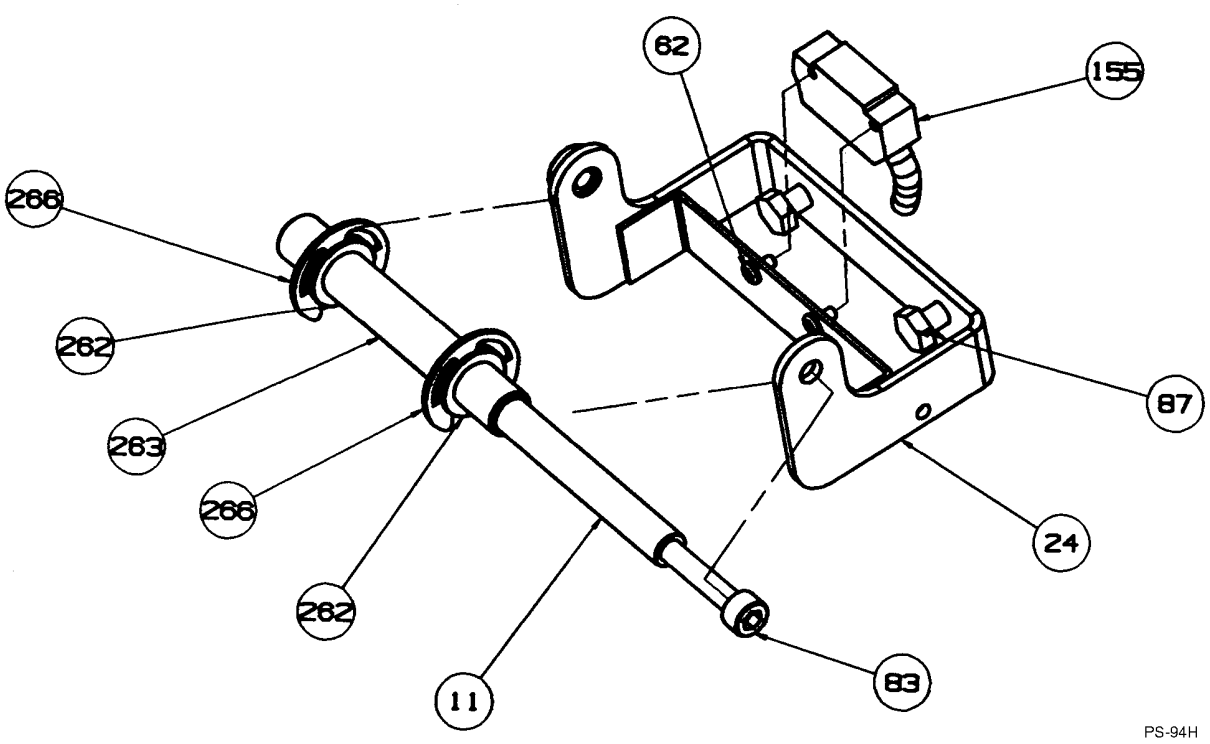


Figure 8-16. Detail B

Item Number	Part Number	Description	Qty
11	78-8123-1159-1	SHAFT, Entry Roller	1
24	78-8123-1309-2	BRACKET, Roller, Painted	1
	78-8123-1173-2	BRACKET, Roller, Stainless	1
62	26-1014-8890-1	SCREW, Machine, Pan Hd. Phil., M3 x 6 mm Lg	10
83	26-1014-8759-8	SCREW, Cap, Soc. Hd. Hex, M6 x 100 mm Lg	1
87	26-1014-8865-3	SCREW, Machine, Hex Hd., M6 x 12 mm Lg	2
155	78-8123-0329-1	PHOTOCELL ASSEMBLY, PHC316	1
262	78-8123-6337-8	GUIDE, Tape	4
263	78-8123-6338-6	ROLLER, Entry	2
266	12-7996-1444-6	E-RING, Retaining, 3/4 in, Waldes Truarc #X5133-74	4

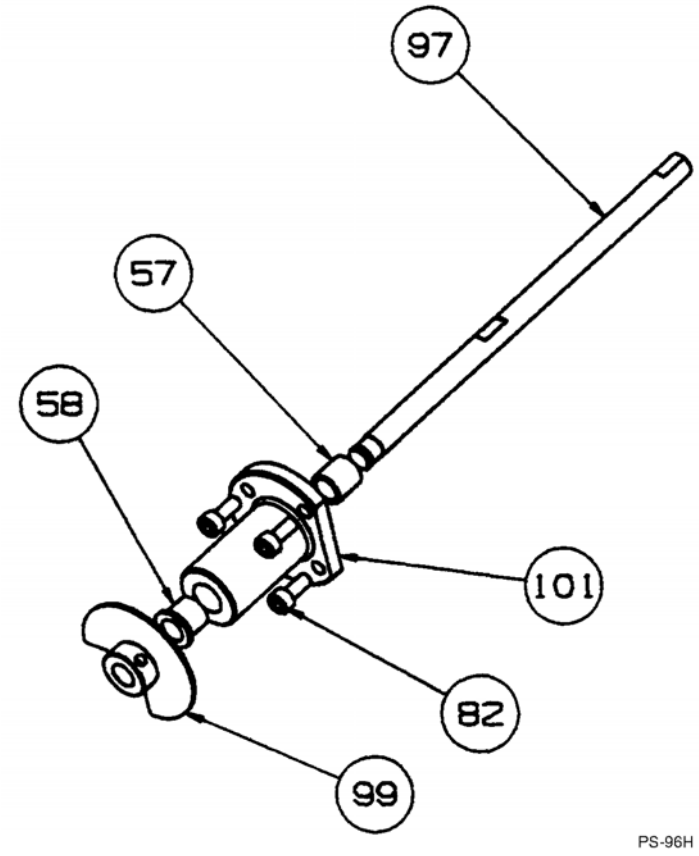


Figure 8-17. Detail C

Item Number	Part Number	Description	Qty
57	78-8161-8102-4	BEARING, 3/8 in ID x 1/2 in OD x 1/2 in Lg	1
58	78-8161-4227-3	BEARING, Flanged, 3/8 in ID x 1/2 in OD x 1/2 in Lg	1
82	26-1014-8862-0	SCREW, Cap, Soc. Hd. Hex, M5 x 12 mm Lg	16
97	78-8123-1204-5	SHAFT, Pivot	1
99	78-8123-1206-0	CAM	1
101	78-8123-1208-6	SHAFT, Housing Pivot	1

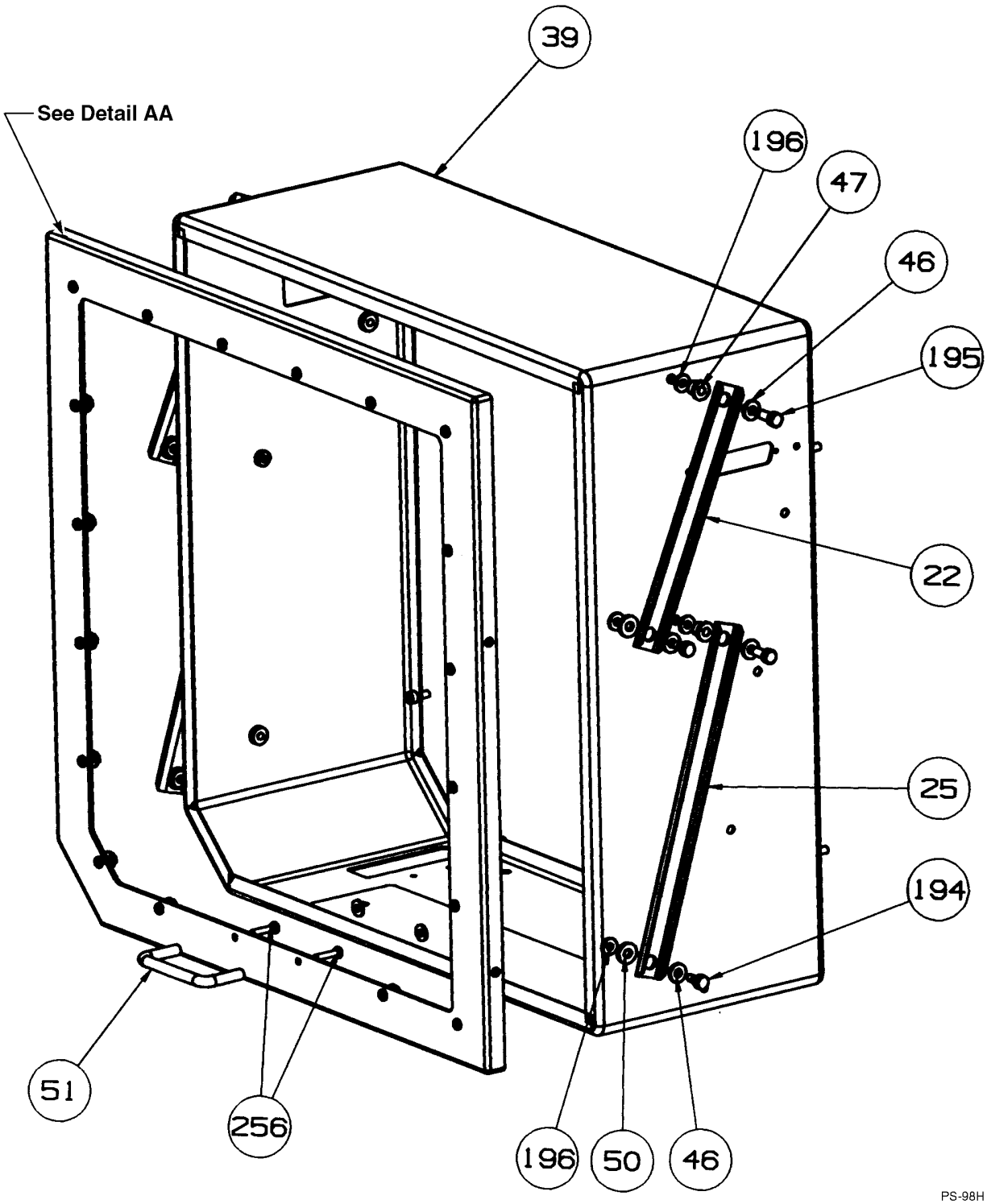


Figure 8-18. Detail D

Item Number	Part Number	Description	Qty
22	78-8123-1308-4	LINK, Top Door, Painted	2
	78-8123-1171-6	LINK, Top Door, Stainless	2
25	78-8123-1310-0	LINK, Bottom Door, Painted	2
	78-8123-1174-0	LINK, Bottom Door, Stainless	2
39	78-8123-6190-1	ENCLOSURE, Front, R/H, Painted	1
	78-8123-6185-1	ENCLOSURE, Front, R/H, Stainless	1
	78-8123-1314-2	ENCLOSURE, Front, L/H, Painted	1
	78-8123-1190-6	ENCLOSURE, Front, L/H, Stainless	1
46	26-1014-8721-8	BEARING, Flanged, M250, 6 ID x 10 OD x 4 mm Lg	8
47	26-1014-8722-6	BEARING, Flanged, M250, 6 ID x 10 OD x 10 mm Lg	4
50	26-1014-8725-9	BEARING, Thrust, 1/4 in ID x 5/8 in OD x 3/32 in Thick	4
51	26-1014-8726-7	HANDLE, Round, Stainless	1
194	26-1014-8846-3	SCREW, Shoulder, M5 x .8, 6 Dia x 6 mm, Stainless, Berg #PZM-19	4
195	26-1014-8847-1	SCREW, Shoulder, M5 x .8, 6 Dia x 14 mm, Stainless, Berg #PZM-23	4
196	26-1014-8848-9	WASHER, .5 OD x .2 ID x .062 Thick, 316 Stainless, Boker's	8
256	26-1014-9235-8	SCREW, Machine, Pan Hd. Phil., 8-32 x 3/4 in Lg	2

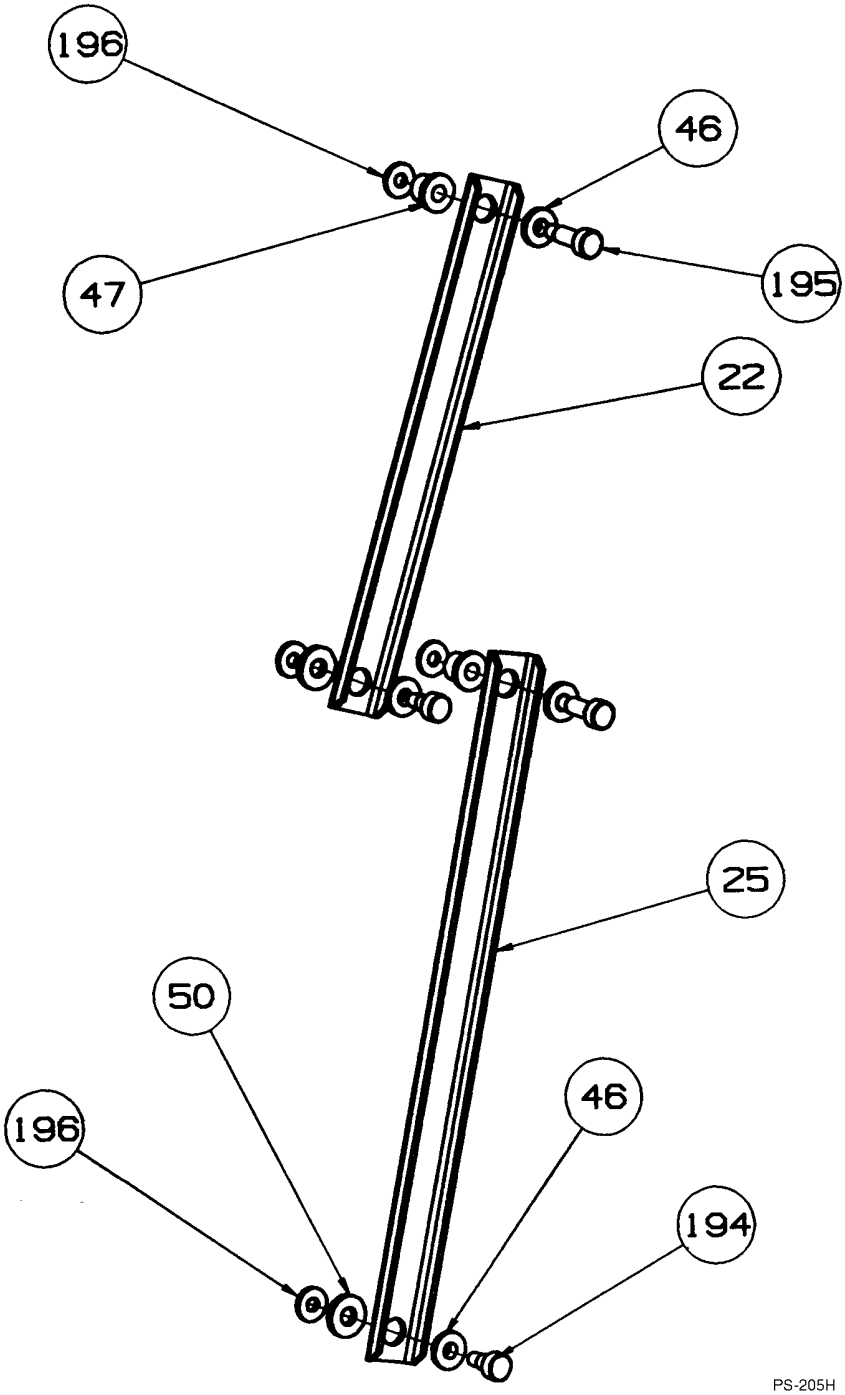


Figure 8-19. Detail E

Item Number	Part Number	Description	Qty
22	78-8123-1308-4	LINK, Top Door, Painted	2
	78-8123-1171-6	LINK, Top Door, Stainless	2
25	78-8123-1310-0	LINK, Bottom Door, Painted	2
	78-8123-1174-0	LINK, Bottom Door, Stainless	2
46	26-1014-8721-8	BEARING, Flanged, M250, 6 ID x 10 OD x 4 mm Lg	8
47	26-1014-8722-6	BEARING, Flanged, M250, 6 ID x 10 OD x 10 mm Lg	4
50	26-1014-8725-9	BEARING, Thrust, 1/4 in ID x 5/8 in OD x 3/32 in Thick	4
194	26-1014-8846-3	SCREW, Shoulder, M5 x .8, 6 Dia x 6 mm, Stainless, Berg #PZM-19	4
195	26-1014-8847-1	SCREW, Shoulder, M5 x .8, 6 Dia x 14 mm, Stainless, Berg #PZM-23	4
196	26-1014-8848-9	WASHER, .5 OD x .2 ID x .062 Thick, 316 Stainless, Boker's	8

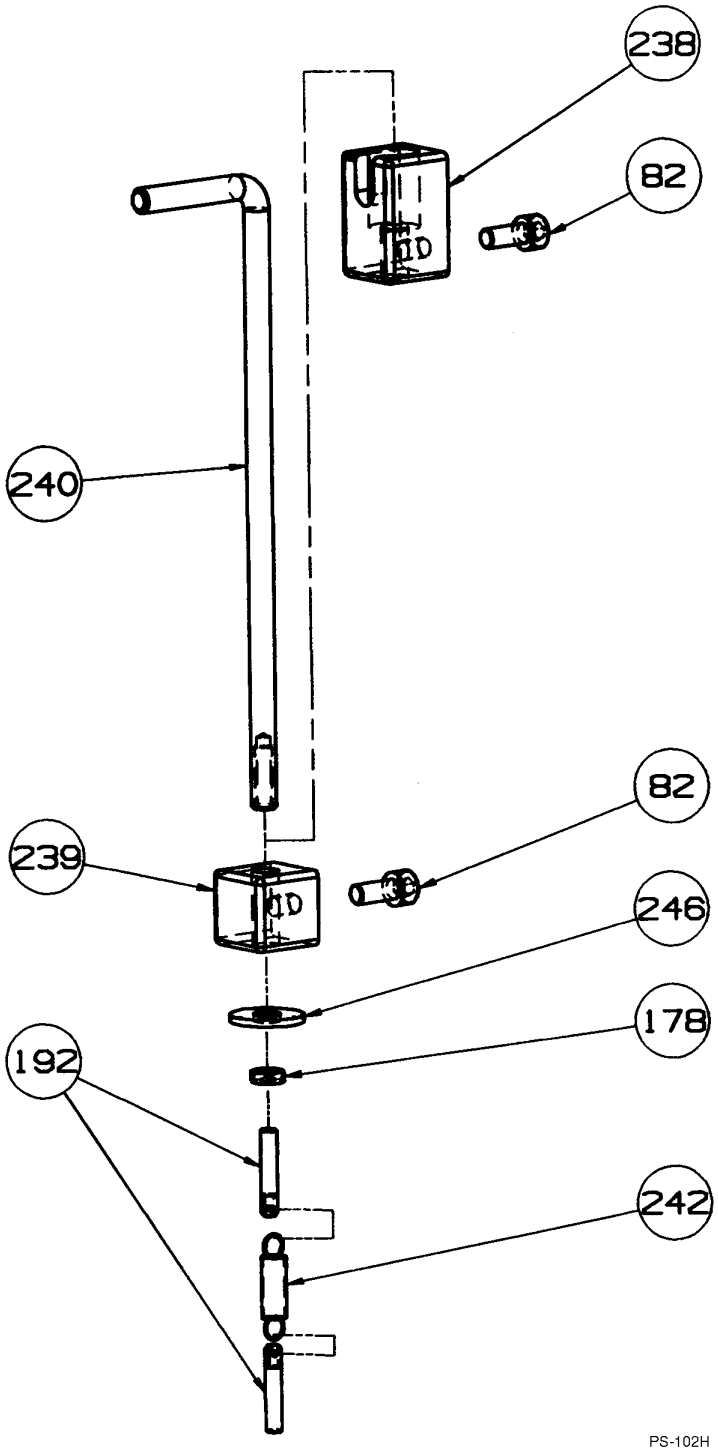


Figure 8-20. Detail F

Item Number	Part Number	Description	Qty
82	26-1014-8862-0	SCREW, Cap, Soc. Hd. Hex, M5 x 12 mm Lg	16
178	26-1014-8983-4	NUT, Hex, 8-32 UNC	2
192	26-1008-9181-6	POST, Spring, #8-32, Century Spring #CSA-60	3
238	78-8123-5870-9	BLOCK, Top Latch	1
239	78-8123-5871-7	BLOCK, Bottom Latch	1
240	78-8123-5869-1	ROD, Latch	1
242	26-1014-9206-9	SPRING, Extension, .250 in OD x 1.03 in Lg, .021 Dia Music Wire, Century Spring Corp #223-38	1
246	26-1014-8762-2	WASHER, Flat Plain, M6	2

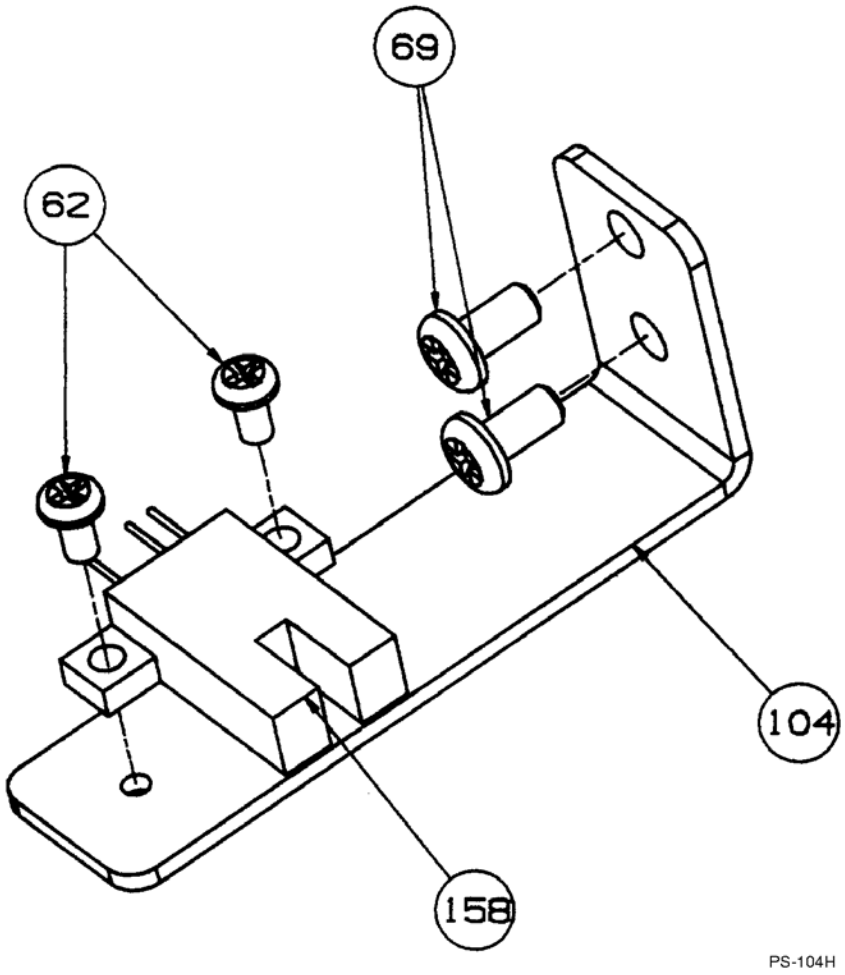


Figure 8-21. Detail G

Item Number	Part Number	Description	Qty
62	26-1014-8890-1	SCREW, Machine, Pan Hd. Phil., M3 x 6 mm Lg	10
69	26-1014-8916-4	SCREW, Machine, Pan Hd. Phil., M4 x 8 mm Lg	16
104	78-8123-1217-7	BRACKET, Sensor	1
158	78-8123-1292-0	PHOTOCELL ASSEMBLY, PHC336	1

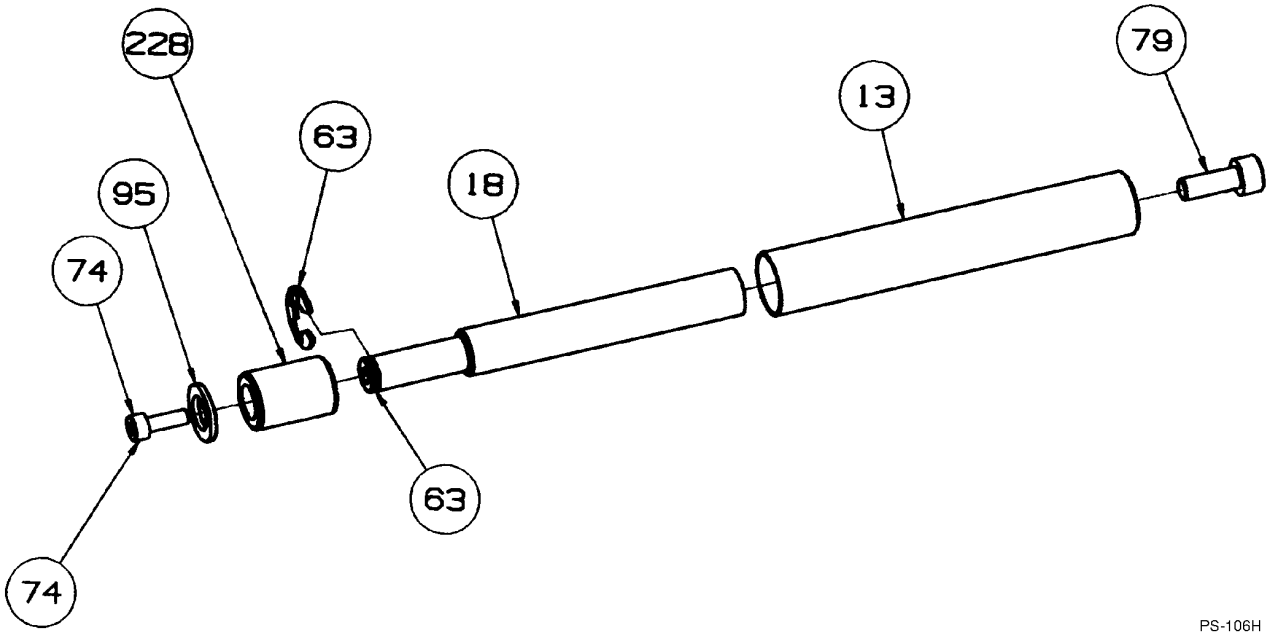


Figure 8-22. Detail H

Item Number	Part Number	Description	Qty
13	78-8123-1367-0	ROLLER, Exit	1
18	78-8123-1334-0	SHAFT, Idler Roller, Hardened	1
63	78-8656-4003-7	E-RING, Retaining, 3/8 in, Waldes Truarc #5133-37	5
74	26-1014-8750-7	SCREW, Cap, Soc. Hd. Hex, M5 x 10 mm Lg	7
79	26-1014-8755-6	SCREW, Machine, Soc. Hd. Hex, M6 x 16 mm Lg	7
95	78-8123-1329-0	SPACER, Thrust	1
228	78-8002-4779-9	CLUTCH, One-Way, 3/8 in ID x 5/8 in OD x 7/8 in Lg, Torrington #RCB-061014	1

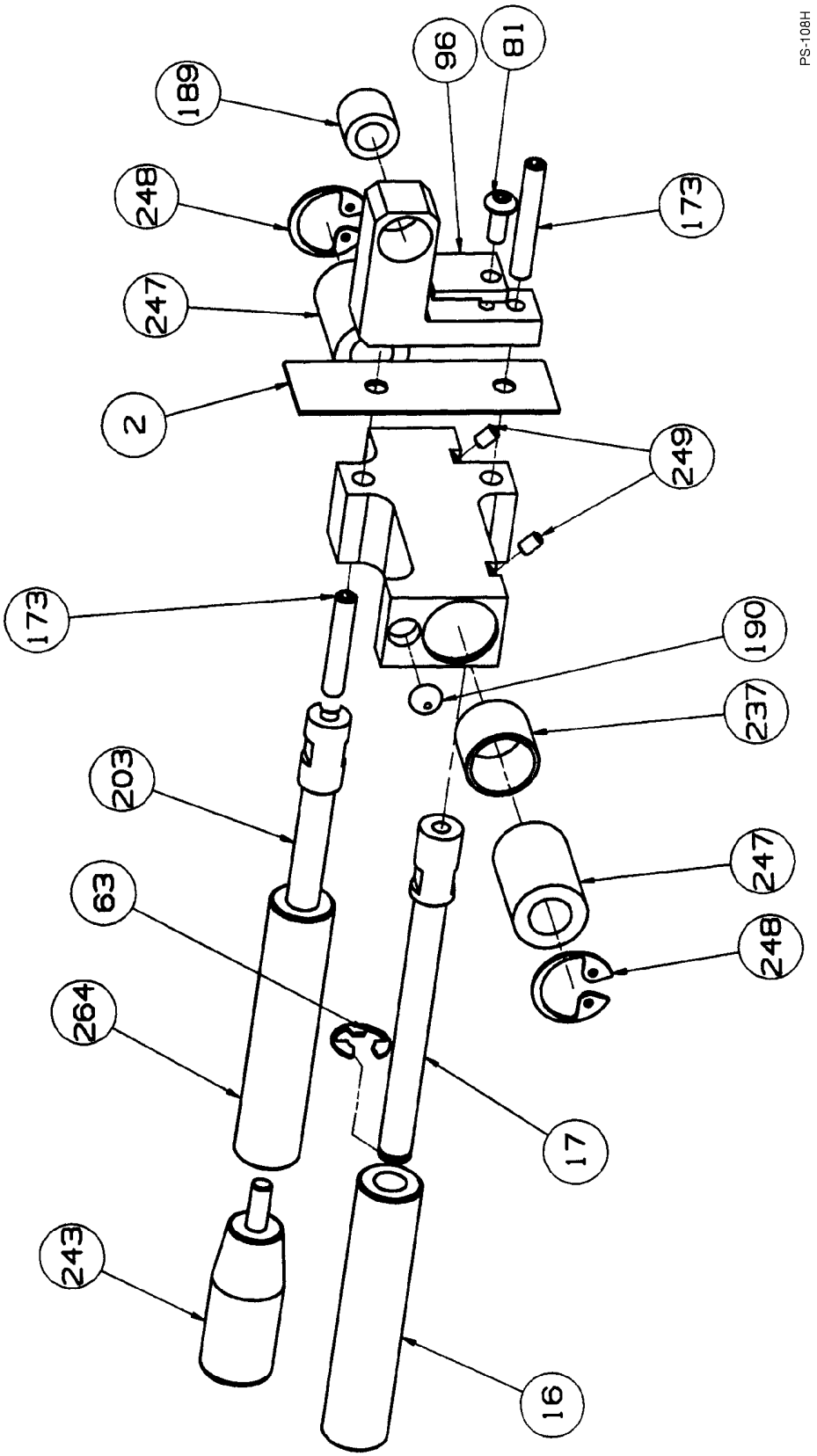
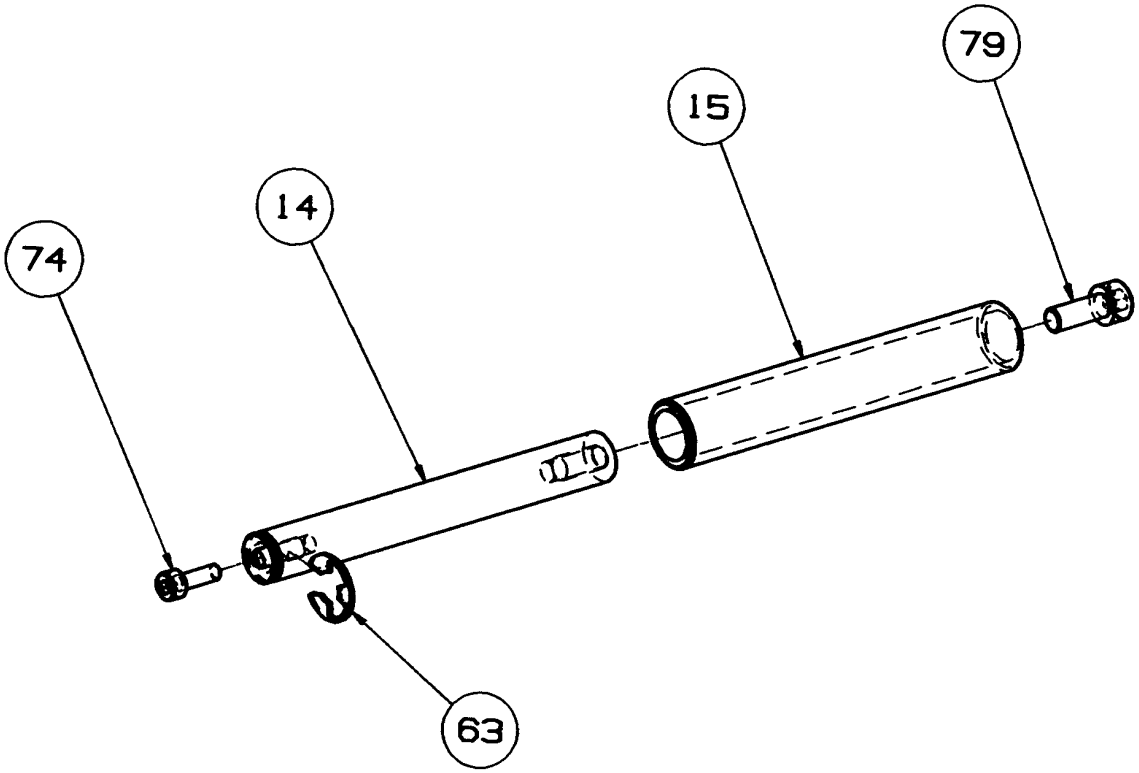
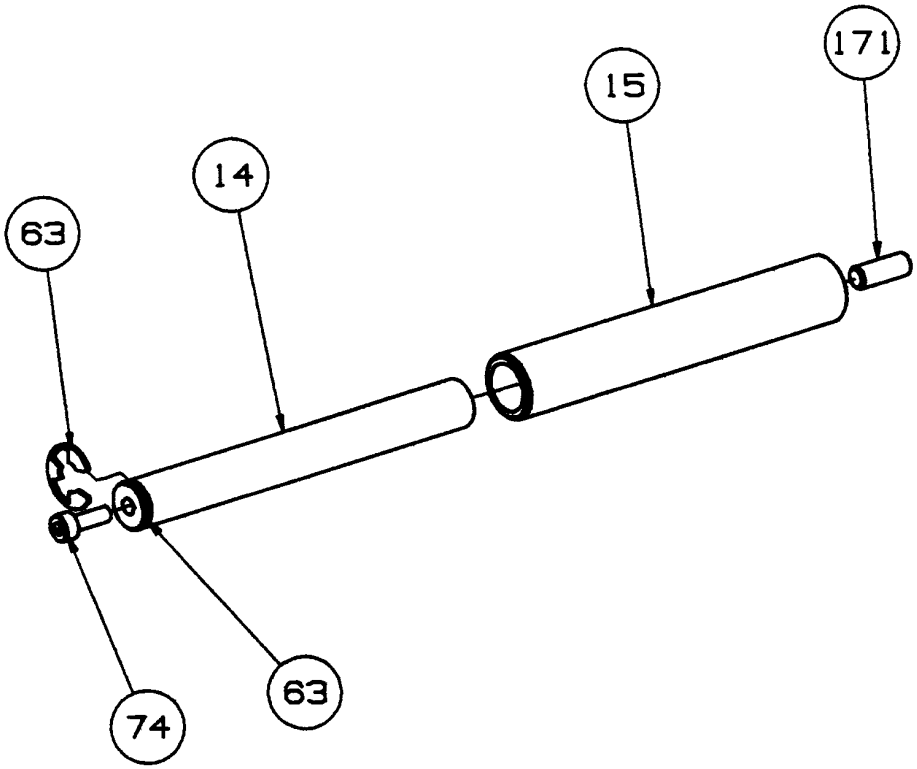


Figure 8-23. Detail I

Item Number	Part Number	Description	Qty
2	78-8123-1149-2	SENSOR FLAG	1
16	78-8123-1164-1	ROLLER, Dancer	2
17	78-8123-1319-1	SHAFT, Dancer	1
63	78-8656-4003-7	E-RING, Retaining, 3/8 in, Waldes Truarc #5133-37	6
81	26-1014-8861-2	SCREW, Machine, Button Hd. Hex, M5 x 12 mm Lg	1
96	78-8123-1342-3	CLAMP, Timing Belt	1
173	26-1014-9639-1	SCREW, Set, Hex Soc Dr., Cup Pt., M6 x 40 mm Lg	2
189	26-1014-8842-2	BEARING, 3/8 in ID, Pacific #PS0610-4	1
190	26-1014-8844-8	3M “BUMPON”, Transparent, #SJ-5306	3
203	78-8123-1408-2	SHAFT, Dancer Extended	1
237	78-8123-5868-3	SPACER, Dancer Base	1
243	26-1014-9205-1	HANDLE, Plastic, JW Winco Inc #6139006	1
247	26-1014-9204-4	BUSHING, Ball, .5 in ID x .875 in OD x 1.25, Thompson #A-81420	2
248	78-8656-3667-0	RING, Retaining, 7/8 in, “N” Series, Waldes Truarc #N5000-87	2
249	26-1014-9203-6	SCREW, Set, Nylon, 8-32 x 1/4 in Lg	2
264	78-8123-6339-4	ROLLER, Dancer, Knurled	1



Detail J



Detail K

PS-109H

Figure 8-24. Detail J and K

Item Number	Part Number	Description	Qty
14	78-8123-1328-2	SHAFT, Idler	4
15	78-8123-1163-3	ROLLER, Idler, Knurled	3
63	78-8656-4003-7	E-RING, Retaining, 3/8 in, Waldes Truarc #5133-37	6
74	26-1014-8750-7	SCREW, Cap, Soc. Hd. Hex, M5 x 10 mm Lg	8
79	26-1014-8755-6	SCREW, Machine, Soc. Hd. Hex, M6 x 16 mm Lg	8
171	26-1014-8869-5	SCREW, Set, Hex Soc Dr., Cup Pt., M6 x 16 mm Lg	1

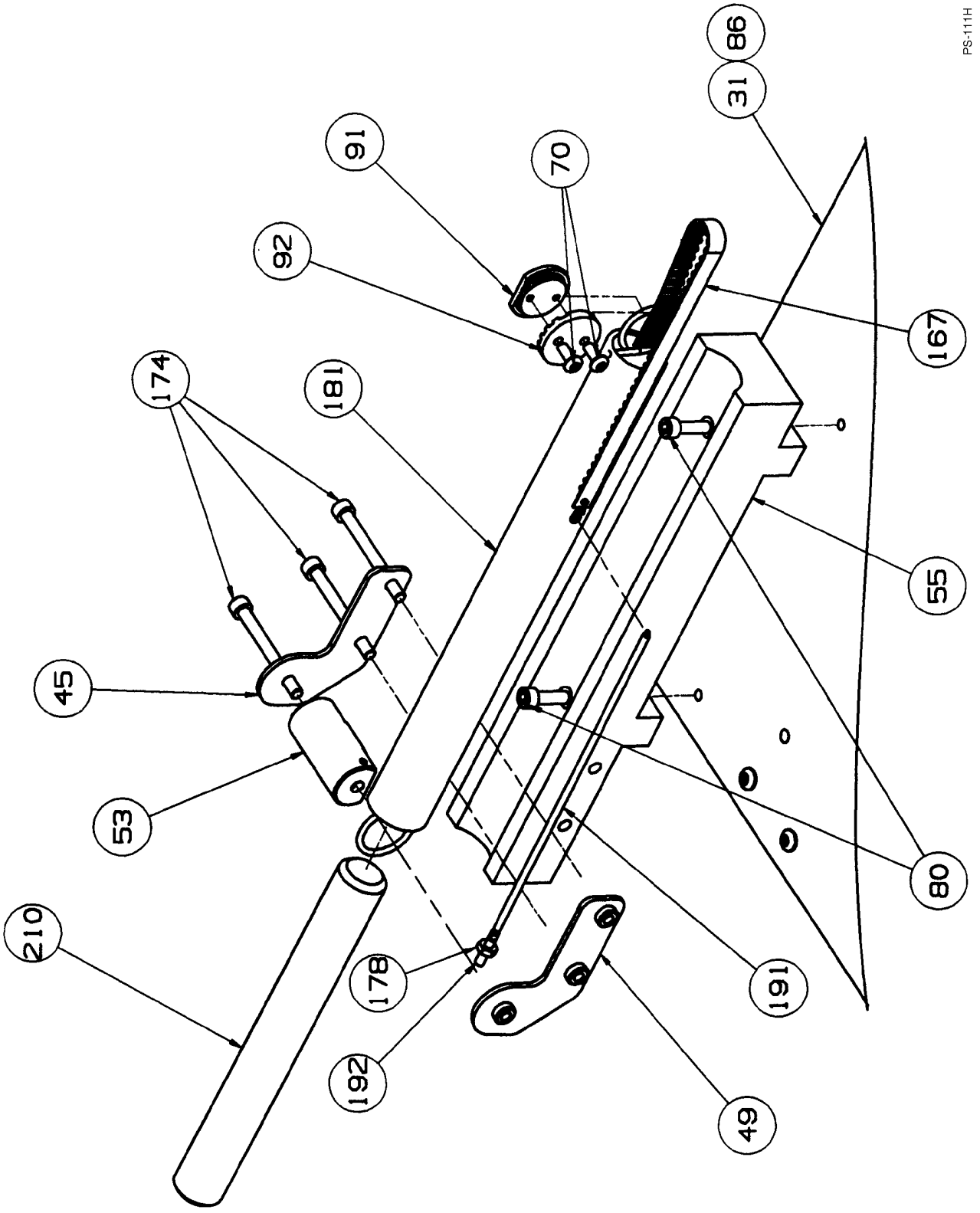


Figure 8-25. Detail L

Item Number	Part Number	Description	Qty
31	78-8123-1180-7	PLATE, Base	1
49	78-8123-6182-8	PLATE, Nut Spring Adjust, R/H	1
	78-8123-1331-6	PLATE, Nut Spring Adjust, L/H	1
53	78-8123-1332-4	POST, Spring Adjust	1
55	78-8123-1338-1	CRADLE, Spring	1
70	26-1014-8894-3	SCREW, Machine, Pan Hd. Phil., M4 x 12 mm Lg	20
80	26-1014-8756-4	SCREW, Machine, Soc. Hd. Hex, M6 x 20 mm Lg	2
86	26-1014-8864-6	SCREW, Machine, Button Hd. Hex, M6 x 10 mm Lg	8
91	78-8123-1346-4	END, Spring	1
92	78-8123-1345-6	END, Spring Grooved	1
167	78-8123-1381-1	BELT, Spring Timing	1
174	26-1014-8871-1	SCREW, Cap, Soc. Hd. Hex, M6 x 60 mm Lg	3
178	26-1014-8983-4	NUT, Hex, 8-32 UNC	2
181	26-1014-8849-7	SPRING, Music Wire, Associated #E-1250-115-7500	1
191	26-1014-9331-5	SPRING, Music Wire, ZN PL, Century #5275	1
192	26-1008-9181-6	POST, Spring, #8-32, Century Spring #CSA-60	3
210	78-8123-1445-4	STOP, Spring	1

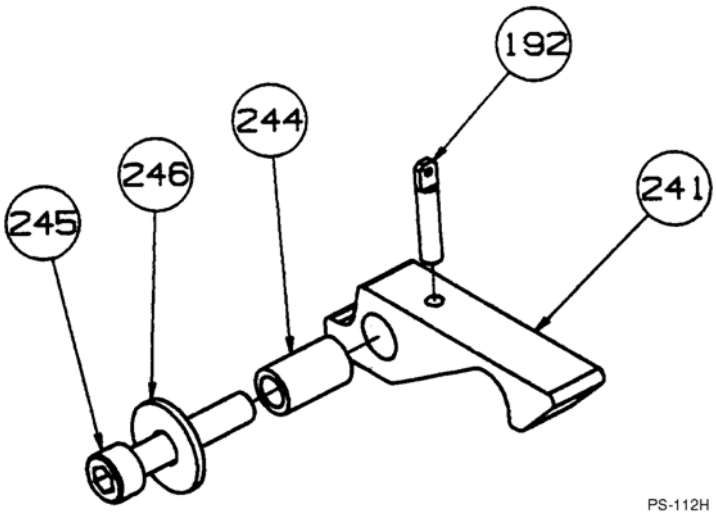


Figure 8-26. Detail M

Item Number	Part Number	Description	Qty
192	26-1008-9181-6	POST, Spring, #8-32, Century Spring #CSA-60	3
241	78-8123-5931-9	LATCH, Dancer	1
244	78-8014-0988-5	BUSHING, Sleeve, Oilite #AA-307-10	1
245	26-1014-9208-5	SCREW, Cap, Soc. Hd. Hex, M6 x 30 mm Lg	1
246	26-1014-8762-2	WASHER, Flat Plain, M6	2

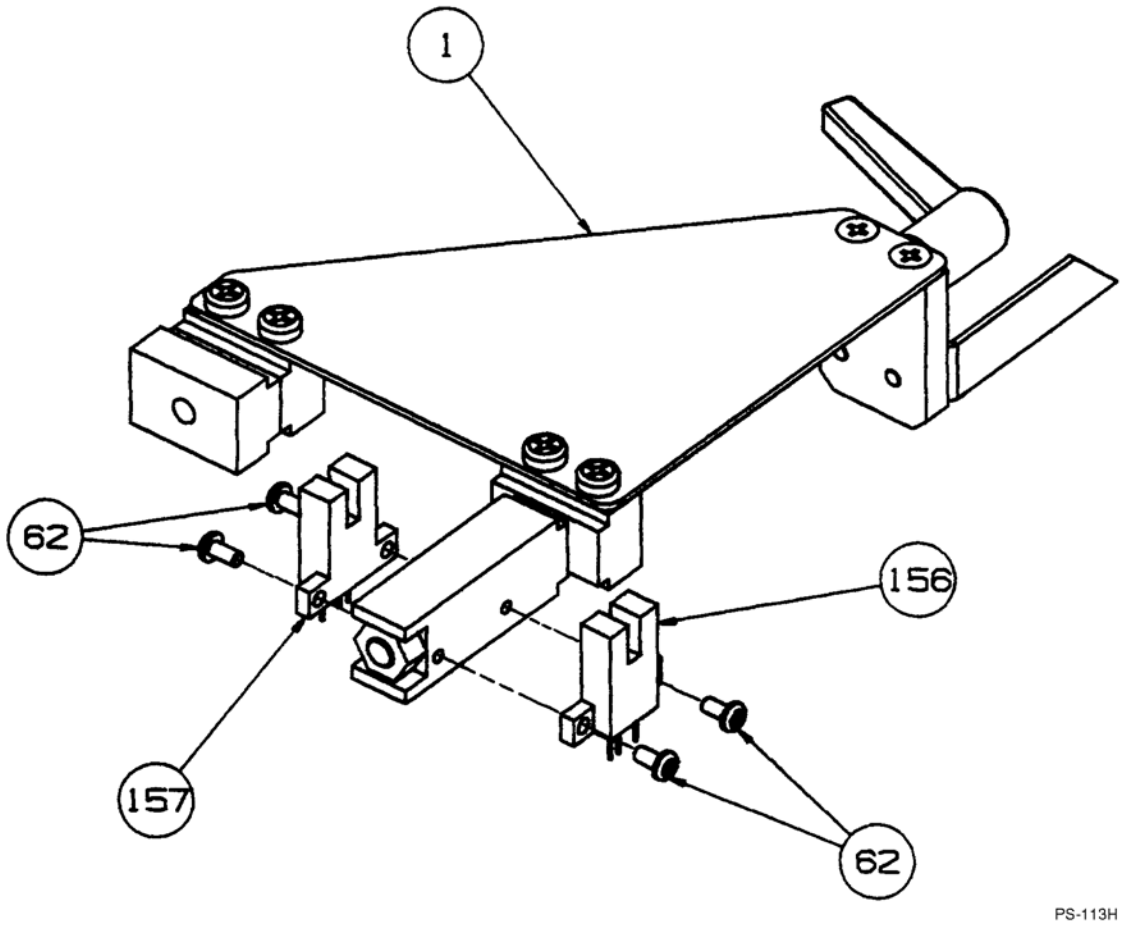


Figure 8-27. Detail N

Item Number	Part Number	Description	Qty
1	78-8123-6179-4	LENGTH SENSOR ASSEMBLY R/H	1
	78-8123-1150-0	LENGTH SENSOR ASSEMBLY L/H	1
62	26-1014-8890-1	SCREW, Machine, Pan Hd. Phil., M3 x 6 mm Lg	10
156	78-8123-0331-7	PHOTOCELL ASSEMBLY, PHC318	1
157	78-8123-1291-2	PHOTOCELL ASSEMBLY, PHC320	1

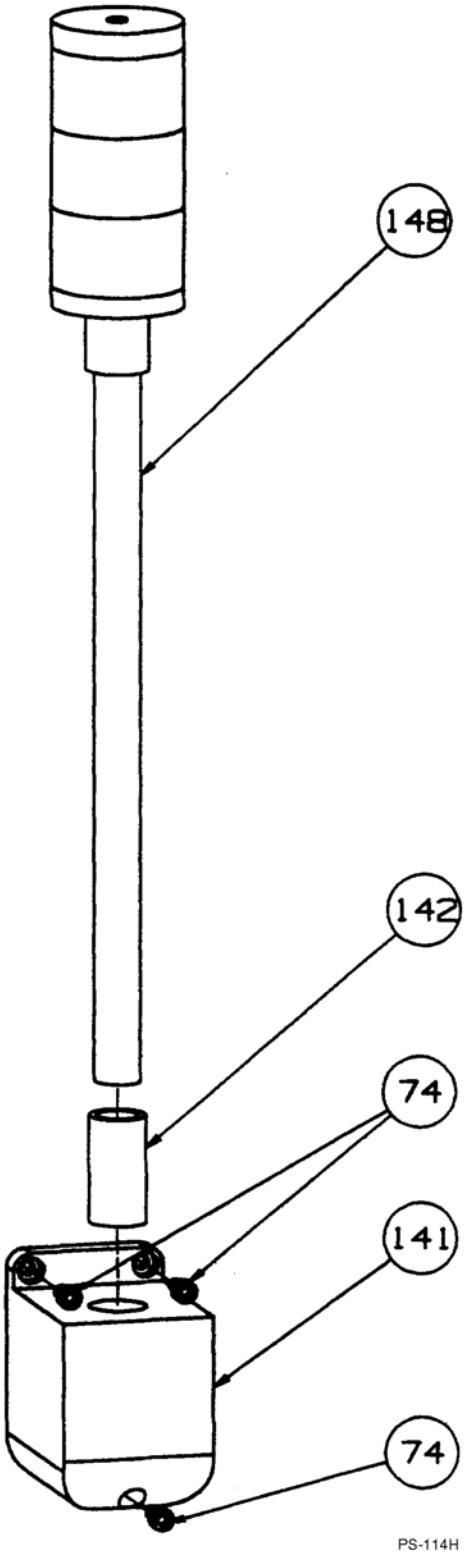


Figure 8-28. Detail P

Item Number	Part Number	Description	Qty
74	26-1014-8750-7	SCREW, Cap, Soc. Hd. Hex, M5 x 10 mm Lg.	8
141	26-1014-8782-0	BRACKET, Light Pole, Patlite SZ-017	1
142	26-1014-8783-8	ADAPTER, Patlite SZ-903	1
148	78-8123-0289-7	STACKLIGHT ASSEMBLY	1

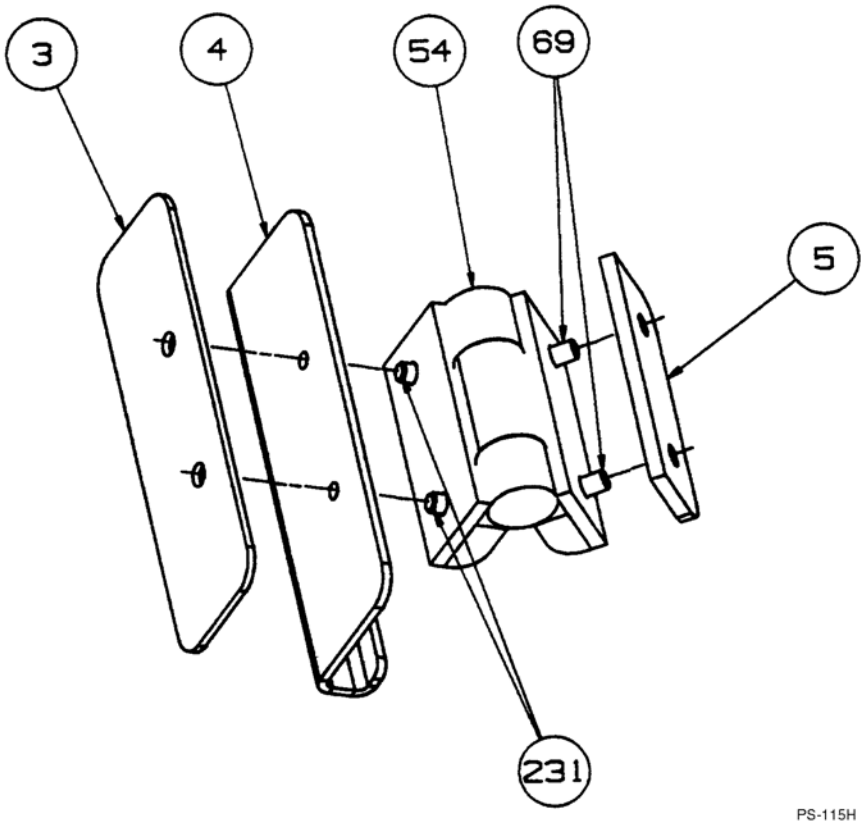


Figure 8-29. Detail Q

Item Number	Part Number	Description	Qty
3	78-8123-1151-8	GASKET, Tape Door	2
4	78-8123-1305-0	TAPE DOOR, Painted	2
	78-8123-1152-6	TAPE DOOR, Stainless	2
5	78-8123-1306-8	SPACER, Tape Door, Painted	2
	78-8123-1153-4	SPACER, Tape Door, Stainless	2
54	26-1014-9079-0	HINGE, Detented	2
69	26-1014-8916-4	SCREW, Machine, Pan Hd. Phil., M4 x 8 mm Lg	16
231	26-1014-9080-8	SCREW, Machine, Pan Hd. Phil., M4 x 6 mm Lg	4

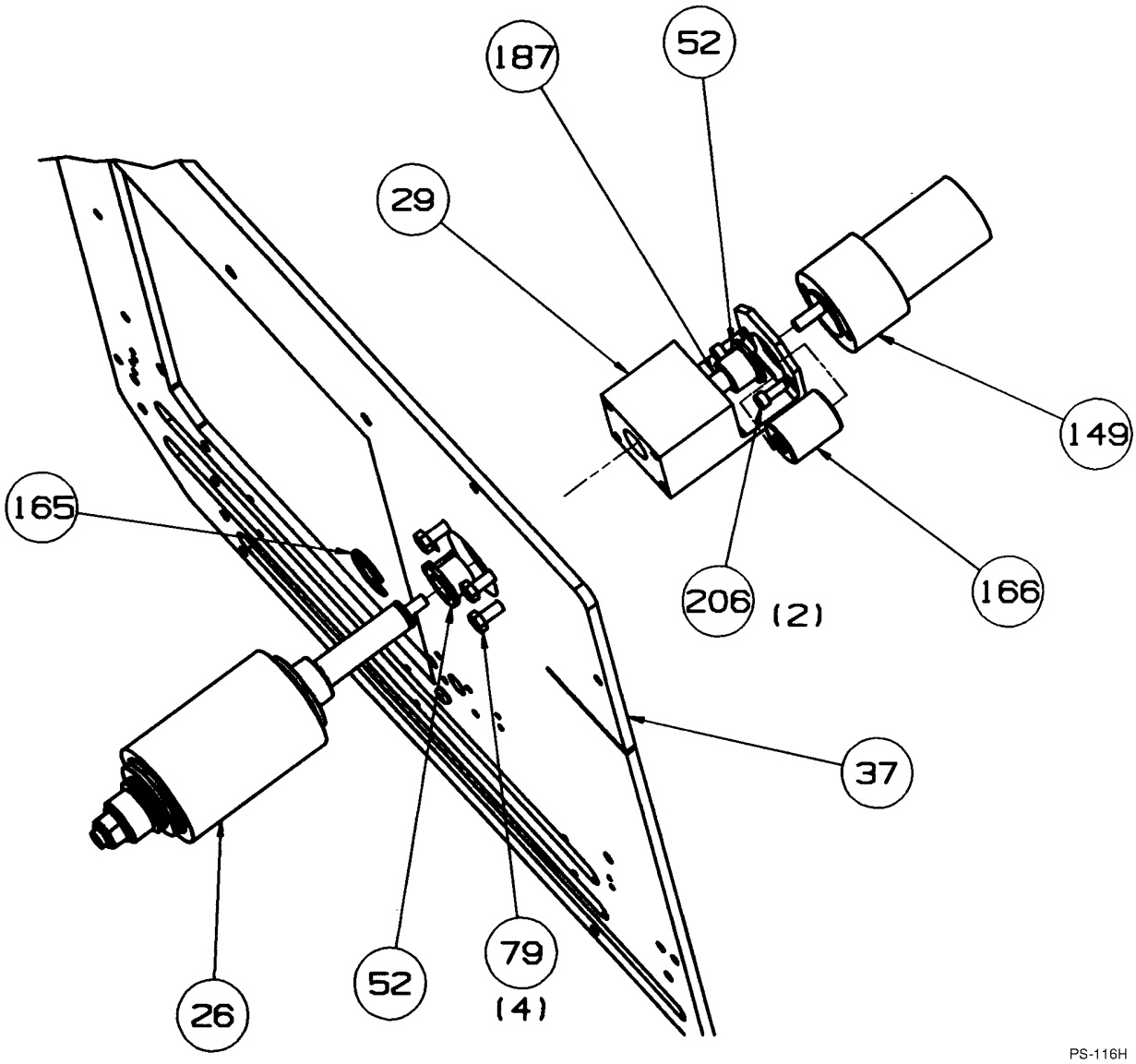


Figure 8-30. Detail R

Item Number	Part Number	Description	Qty
26	78-8123-1175-7	ROLLER, Pre-Strip	1
29	78-8123-1178-1	HOUSING, Roller	1
37	78-8123-1188-0	PLATE, Back	1
52	78-8003-7899-0	BEARING, Flanged, 5/8 in ID x 3/4 in OD x 1/2 in Lg	2
79	26-1014-8755-6	SCREW, Machine, Soc. Hd. Hex, M6 x 16 mm Lg	8
149	78-8123-1349-8	MOTOR ASSEMBLY, Pre-Strip	1
165	26-1014-8371-2	E-RING, Retaining, 5/8 in, Waldes Truarc #5133-62-ZF	1
166	78-8123-1380-3	COUPLING, Pre-strip Roller	1
187	78-8000-8613-0	CLUTCH, One-Way, 1/4 in ID, Torrington #RC-040708	1
206	26-1014-8874-5	SCREW, Cap, Soc. Hd. Hex, 10-32 x 1/2 in Lg	2

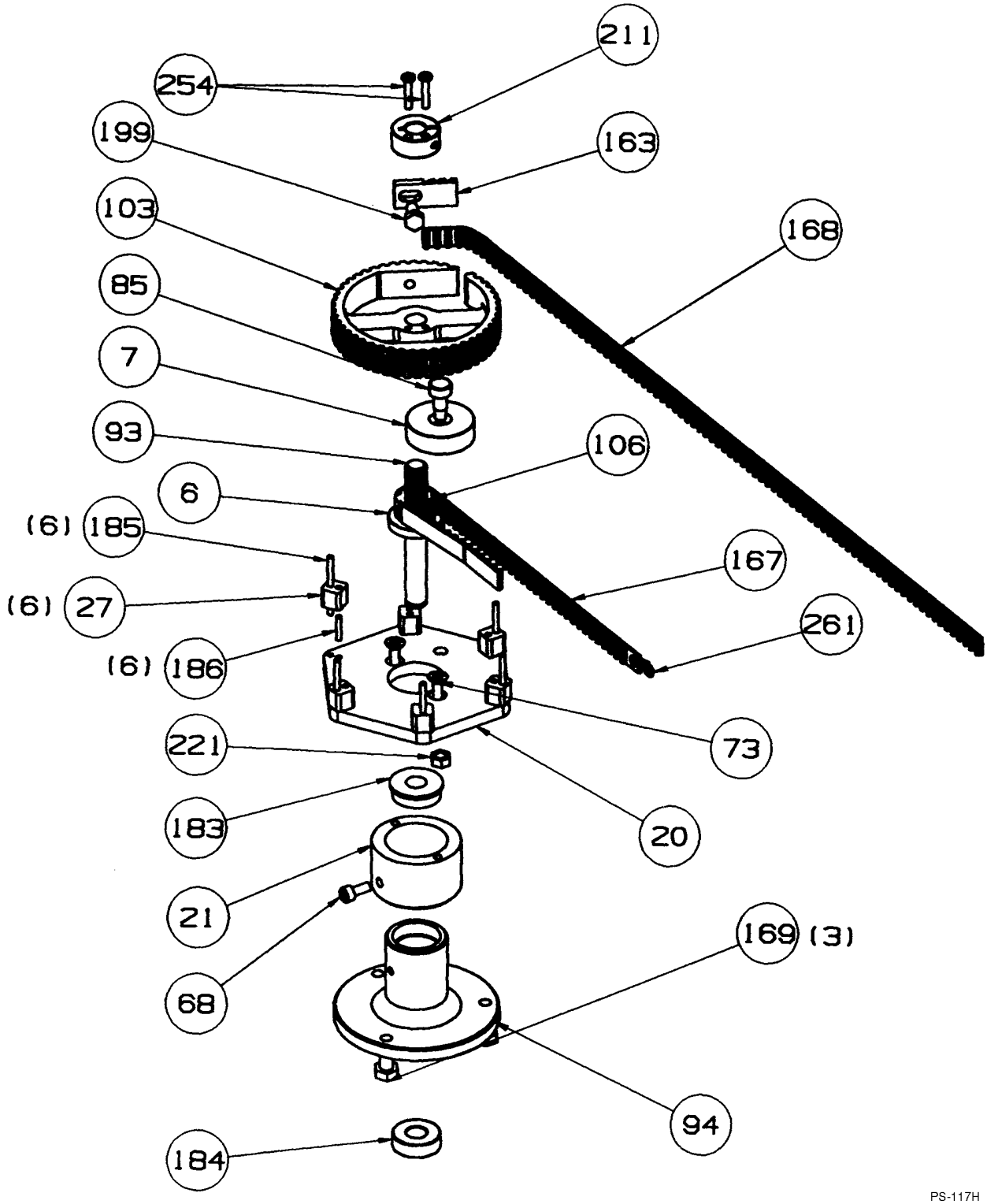


Figure 8-31. Detail S

Item Number	Part Number	Description	Qty
6	78-8123-1339-9	SPACER, Bearing	1
7	78-8123-1340-7	WHEEL, Belt	1
20	78-8123-1341-5	PLATE, Guide	1
21	78-8123-1335-7	BOSS, Guide Plate	1
27	78-8123-1343-1	POST, Guide	6
68	26-1014-8744-0	SCREW, Cap, Soc. Hd. Hex, M4 x 10 mm Lg	1
73	26-1014-8896-8	SCREW, Machine, Flat Hd. Phil., M4 x 12 mm Lg	2
85	26-1014-8987-5	SCREW, Shoulder, M6 x 8, Stainless, M5 x .8 THD, Berg #PZM-20	1
93	78-8123-1344-9	SHAFT, Stepped Pulley	1
94	78-8123-1336-5	BASE, Step Pulley	1
103	78-8123-6183-6	PULLEY, Timing Belt, Large, R/H	1
	78-8123-1347-2	PULLEY, Timing Belt, Large, L/H	1
106	78-8123-1348-0	PULLEY, Timing Belt, Small	1
163	78-8123-1364-7	CLAMP, Timing Belt Pulley	1
167	78-8123-1381-1	BELT, Spring Timing	1
168	78-8123-1382-9	BELT, Dancer Timing	1
169	26-1014-8867-9	SCREW, Machine, Hex Hd., M6 x 16 mm Lg	3
183	12-7995-5379-2	BEARING, Ball, 3/8 in ID, W/2 Shields, Flanged, Fafnir #FS3KDD	1
184	78-8005-1189-7	BEARING, Ball, 3/8 in ID, W/2 Shields, Fafnir #S3KDD	1
185	26-1014-8841-4	ROLLPIN, 3/32 in Dia. x 1.25 in Lg, Stainless	6
186	26-1014-8840-6	ROLLPIN, 3/32 in Dia. x .625 in Lg, Stainless	6
199	26-1014-8883-6	SCREW, Machine, Hex Hd., M5 x 10 mm Lg	1
211	78-8123-1453-8	CLAMP, Large Pulley	1
221	26-1014-8984-2	NUT, Hex, M5, 18-8 Stainless	3
254	26-1014-9236-6	SCREW, Machine, Pan Hd. Phil., M3 x 16 mm Lg	2
261	78-8123-6341-0	SPRING, Link	1

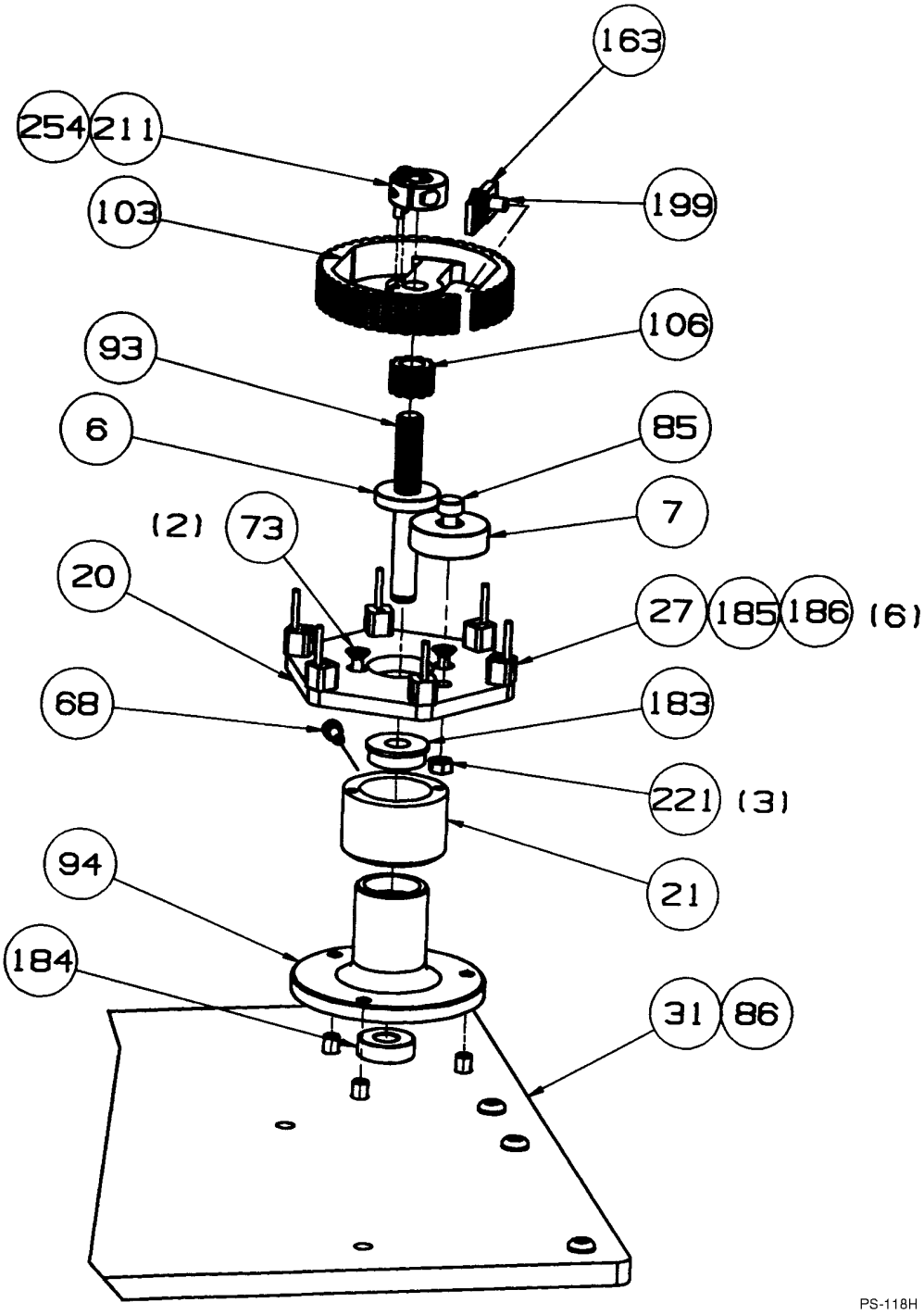


Figure 8-32. Detail T

Item Number	Part Number	Description	Qty
6	78-8123-1339-9	SPACER, Bearing	1
7	78-8123-1340-7	WHEEL, Belt	1
20	78-8123-1341-5	PLATE, Guide	1
21	78-8123-1335-7	BOSS, Guide Plate	1
27	78-8123-1343-1	POST, Guide	6
31	78-8123-1180-7	PLATE, Base	1
73	26-1014-8896-8	SCREW, Machine, Flat Hd. Phil., M4 x 12 mm Lg	2
85	26-1014-8987-5	SCREW, Shoulder, M6 x 8, Stainless, M5 x .8 THD, Berg #PZM-20	1
86	26-1014-8864-6	SCREW, Machine, Button Hd. Hex, M6 x 10 mm Lg	8
93	78-8123-1344-9	SHAFT, Stepped Pulley	1
94	78-8123-1336-5	BASE, Step Pulley	1
103	78-8123-6183-6	PULLEY, Timing Belt, Large, R/H	1
	78-8123-1347-2	PULLEY, Timing Belt, Large, L/H	1
106	78-8123-1348-0	PULLEY, Timing Belt, Small	1
163	78-8123-1364-7	CLAMP, Timing Belt Pulley	1
183	12-7995-5379-2	BEARING, Ball, 3/8 in ID, W/2 Shields, Flanged, Fafnir #FS3KDD	1
184	78-8005-1189-7	BEARING, Ball, 3/8 in ID, W/2 Shields, Fafnir #S3KDD	1
185	26-1014-8841-4	ROLLPIN, 3/32 in Dia. x 1.25 in Lg, Stainless	6
186	26-1014-8840-6	ROLLPIN, 3/32 in Dia. x .625 in Lg, Stainless	6
199	26-1014-8883-6	SCREW, Machine, Hex Hd., M5 x 10 mm Lg	1
211	78-8123-1453-8	CLAMP, Large Pulley	1
221	26-1014-8984-2	NUT, Hex, M5, 18-8 Stainless	3
254	26-1014-9236-6	SCREW, Machine, Pan Hd. Phil., M3 x 16 mm Lg	2

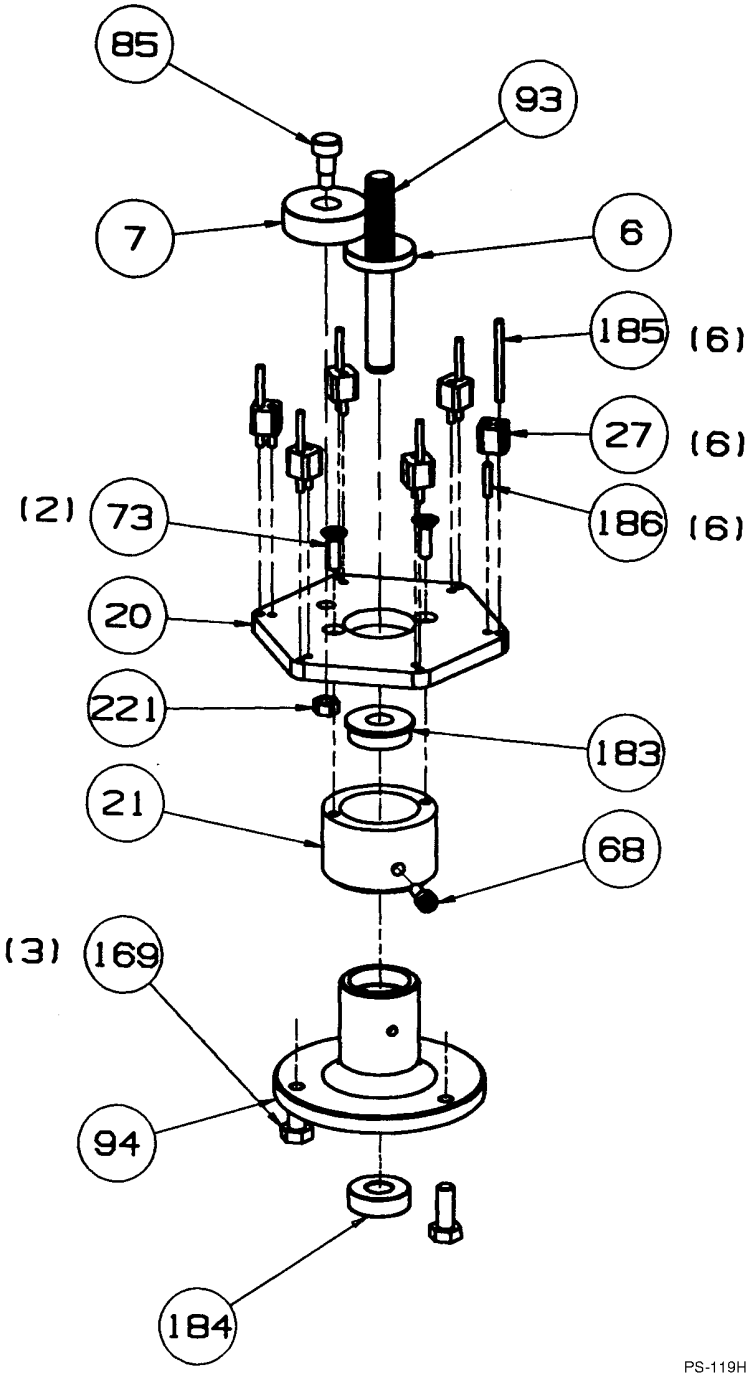


Figure 8-33. Detail U

Item Number	Part Number	Description	Qty
6	78-8123-1339-9	SPACER, Bearing	1
7	78-8123-1340-7	WHEEL, Belt	1
20	78-8123-1341-5	PLATE, Guide	1
21	78-8123-1335-7	BOSS, Guide Plate	1
27	78-8123-1343-1	POST, Guide	6
68	26-1014-8744-0	SCREW, Cap, Soc. Hd. Hex, M4 x 10 mm Lg	1
73	26-1014-8896-8	SCREW, Machine, Flat Hd. Phil., M4 x 12 mm Lg	2
85	26-1014-8987-5	SCREW, Shoulder, M6 x 8, Stainless, M5 x .8 THD, Berg #PZM-20	1
93	78-8123-1344-9	SHAFT, Stepped Pulley	1
94	78-8123-1336-5	BASE, Step Pulley	1
169	26-1014-8867-9	SCREW, Machine, Hex Hd., M6 x 16 mm Lg	3
183	12-7995-5379-2	BEARING, Ball, 3/8 in ID, W/2 Shields, Flanged, Fafnir #FS3KDD	1
184	78-8005-1189-7	BEARING, Ball, 3/8 in ID, W/2 Shields, Fafnir #S3KDD	1
185	26-1014-8841-4	ROLLPIN, 3/32 in Dia. x 1.25 in Lg, Stainless	6
186	26-1014-8840-6	ROLLPIN, 3/32 in Dia. x .625 in Lg, Stainless	6
221	26-1014-8984-2	NUT, Hex, M5, 18-8 Stainless	3

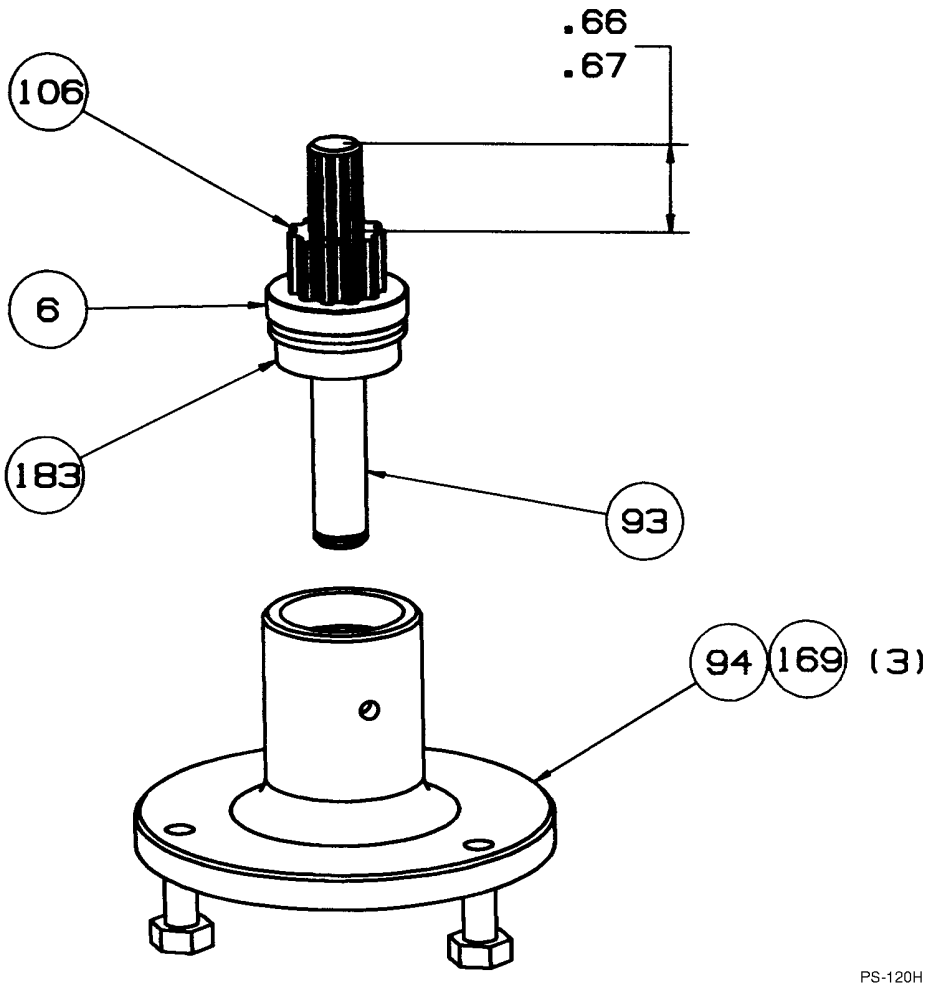


Figure 8-34. Detail V

Item Number	Part Number	Description	Qty
6	78-8123-1339-9	SPACER, Bearing	1
93	78-8123-1344-9	SHAFT, Stepped Pulley	1
94	78-8123-1336-5	BASE, Step Pulley	1
106	78-8123-1348-0	PULLEY, Timing Belt, Small	1
169	26-1014-8867-9	SCREW, Machine, Hex Hd., M6 x 16 mm Lg	3
183	12-7995-5379-2	BEARING, Ball, 3/8 in ID, W/2 Shields, Flanged, Fafnir #FS3KDD	1

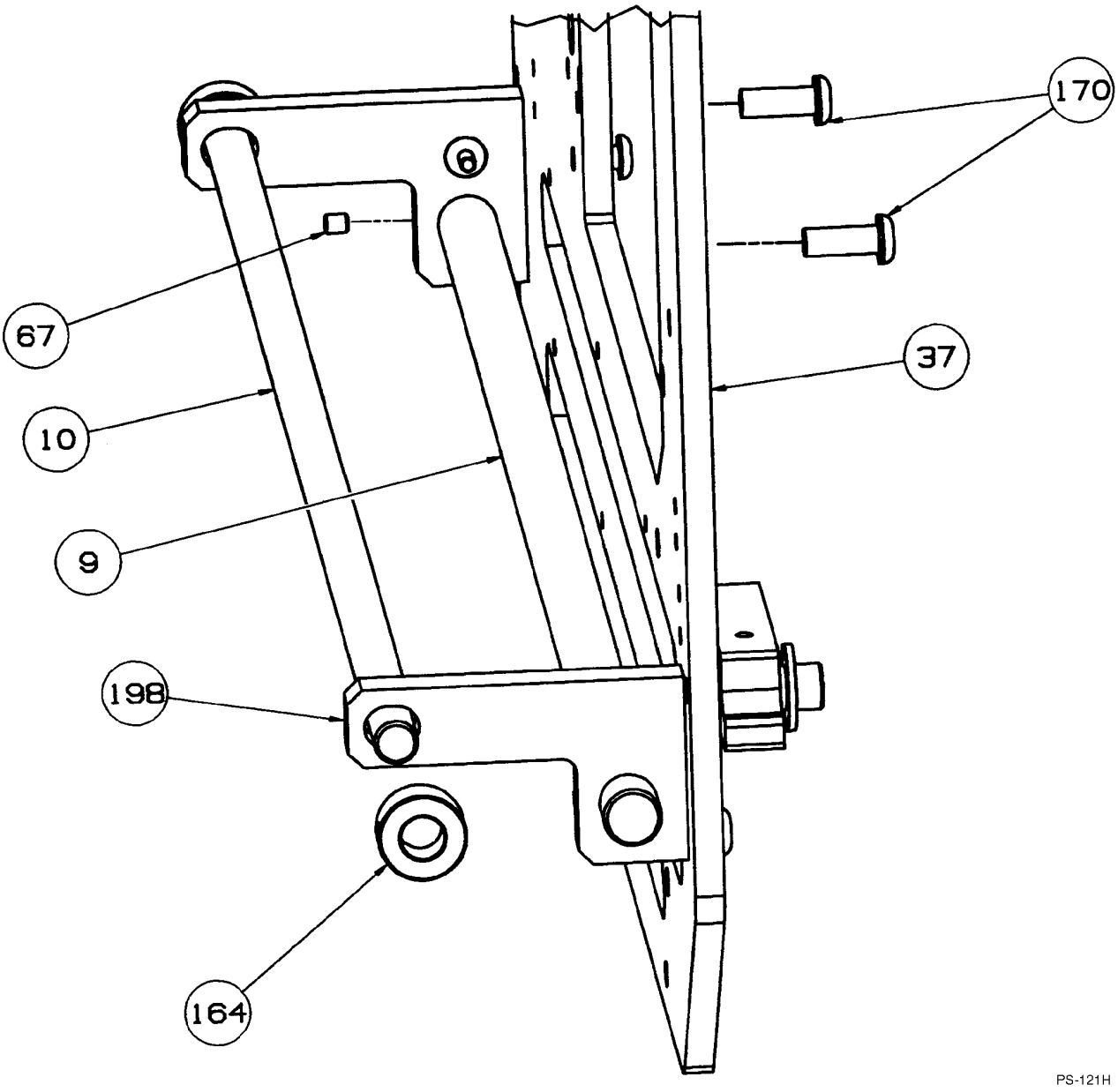


Figure 8-35. Detail W

Item Number	Part Number	Description	Qty
9	78-8123-1369-6	ROD, Front Dancer	1
10	78-8123-1370-4	ROD, Back Dancer	1
37	78-8123-1188-0	PLATE, Back	1
67	26-1014-8893-5	SCREW, Set, Hex Soc. Dr. Cup Pt., M4 x 5 mm Lg	6
164	26-1008-5406-1	COLLAR, Set, 3/8 in ID, Boston #SC37	2
170	26-1014-8868-7	SCREW, Machine, Button Hd. Hex., M6 x 16 mm Lg	3
198	78-8123-1396-9	BRACKET, Dancer Rod, Left	1

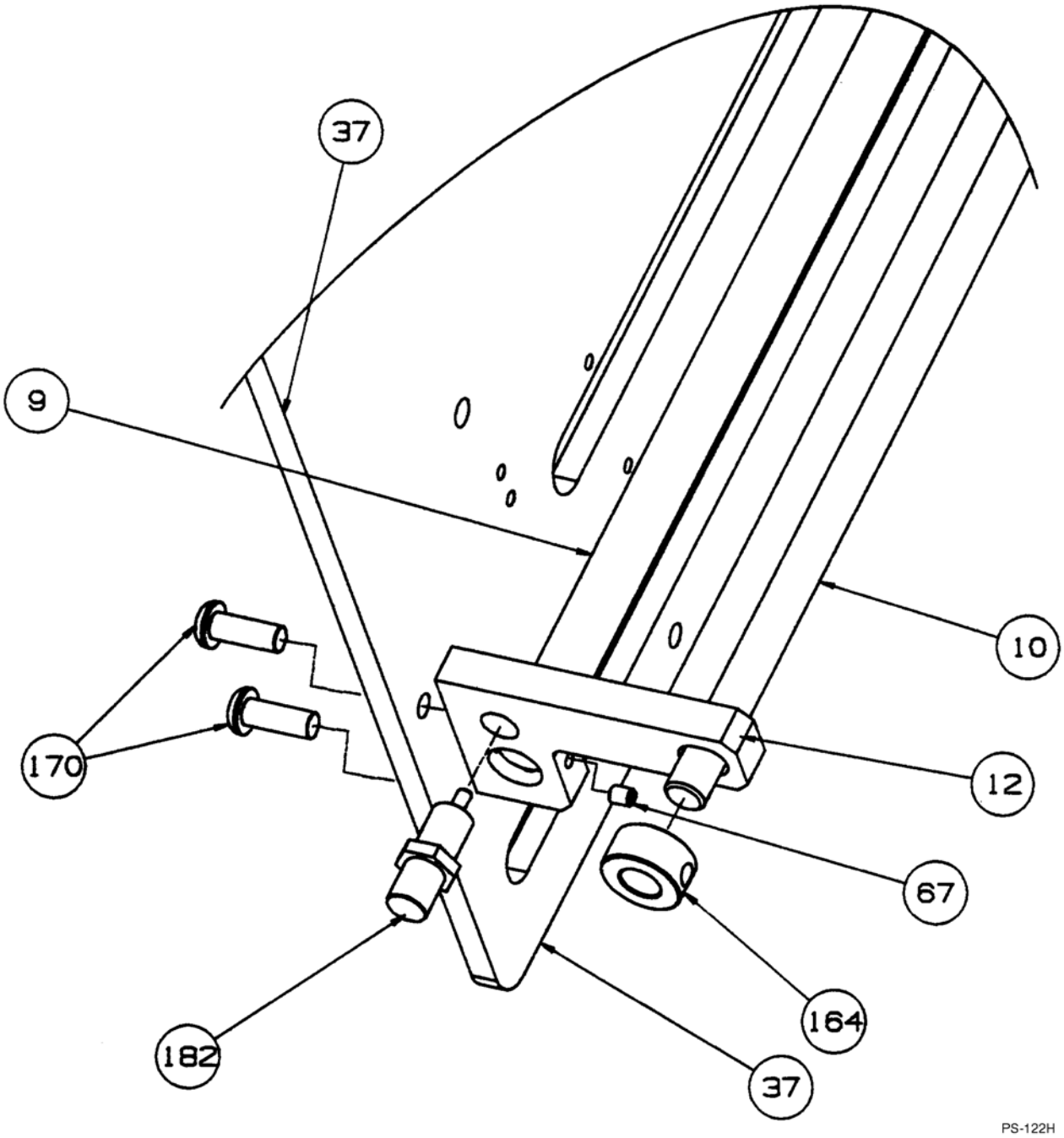


Figure 8-36. Detail X

Item Number	Part Number	Description	Qty
9	78-8123-1369-6	ROD, Front Dancer	1
10	78-8123-1370-4	ROD, Back Dancer	1
12	78-8123-1337-3	BRACKET, Dancer Rod, Right	1
37	78-8123-1188-0	PLATE, Back	1
67	26-1014-8893-5	SCREW, Set, Hex Soc. Dr. Cup Pt., M4 x 5 mm Lg	6
164	26-1008-5406-1	COLLAR, Set, 3/8 in ID, Boston #SC37	2
170	26-1014-8868-7	SCREW, Machine, Button Hd. Hex., M6 x 16 mm Lg	3
182	26-1014-8919-8	SHOCK ABSORBER W/NUT, Enidine #TK21-1	1

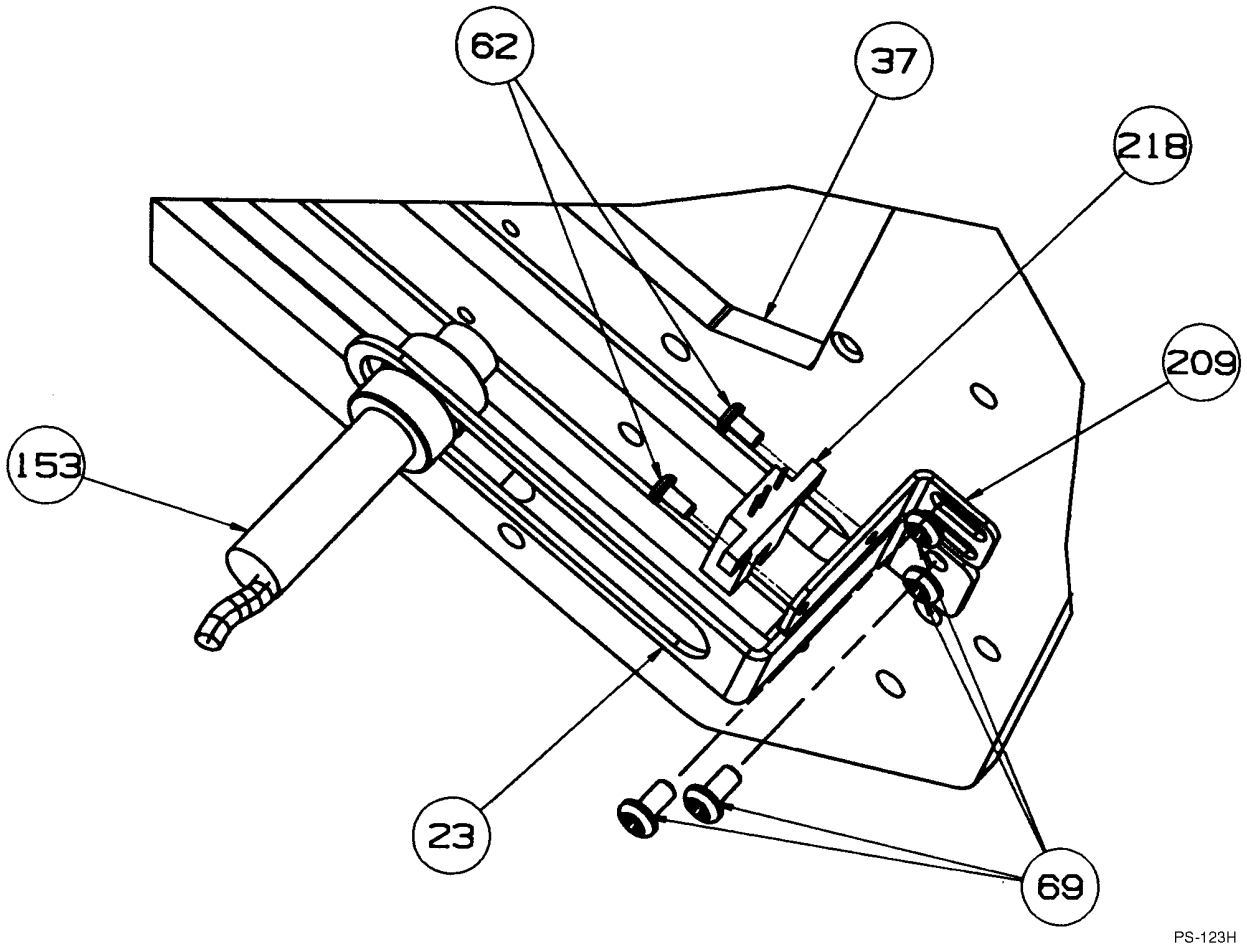


Figure 8-37. Detail Y

Item Number	Part Number	Description	Qty
23	78-8123-1172-4	BRACKET, Limit Sensor	1
37	78-8123-1188-0	PLATE, Back	1
62	26-1014-8890-1	SCREW, Machine, Pan Hd. Phil., M3 x 6 mm Lg	10
69	26-1014-8916-4	SCREW, Machine, Pan Hd. Phil., M4 x 8 mm Lg	16
153	78-8123-1290-4	PROX. SWITCH ASSEMBLY, PXS312	1
209	78-8123-1412-4	BRACKET, Thread Sensor	1
218	78-8123-1465-2	PHOTOCELL ASSEMBLY, PHC 340	1

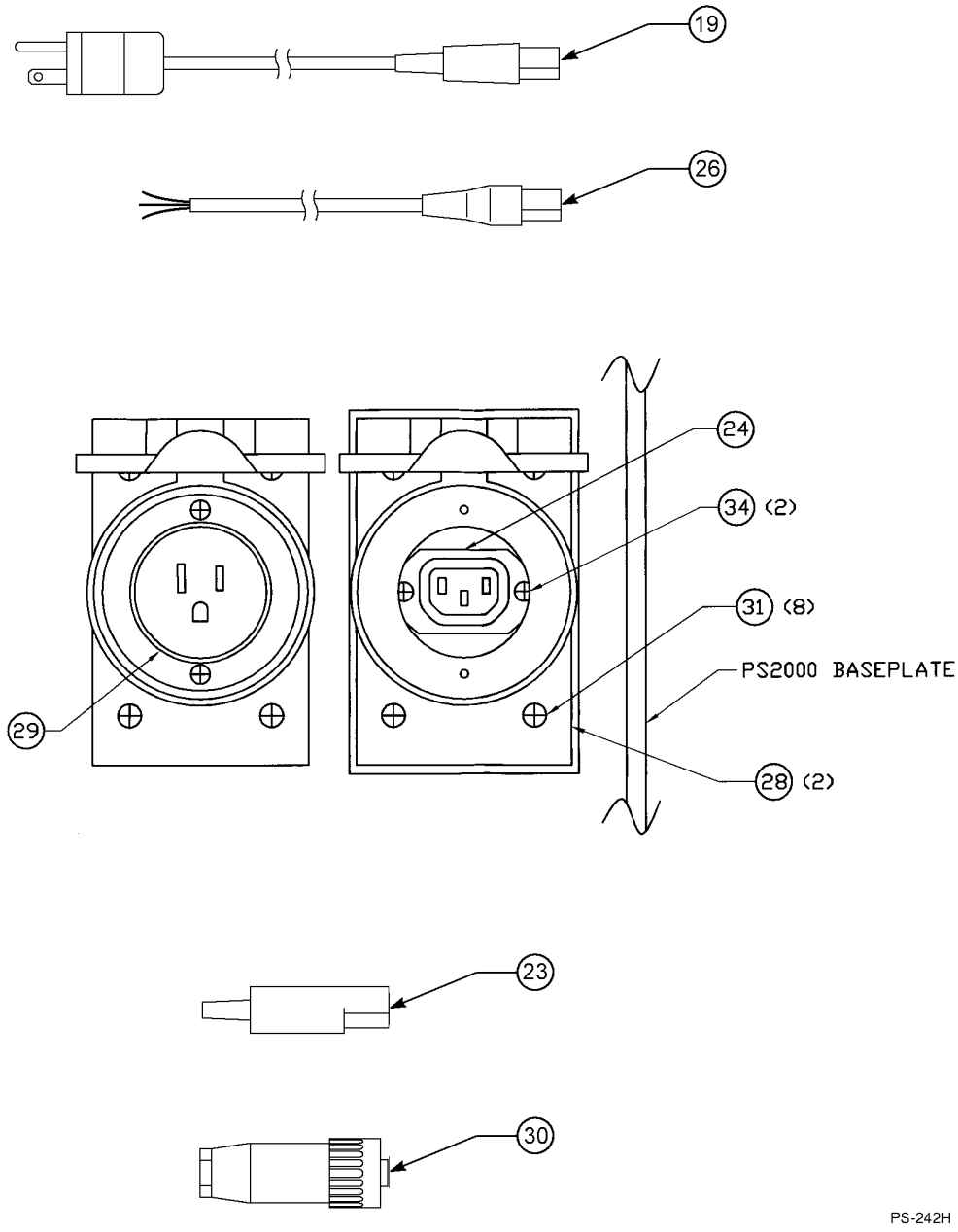


Figure 8-38. Detail Z

✓ **Note**

Item numbers on this page refer to Figure 8-38 only.

Item Number	Part Number	Description	Qty
19	78-8123-0091-7	CORD ASSEMBLY, Power Inlet (US)	1
23	26-1014-9625-0	CONNECTOR, Power, Panel Components #8301512	1
24	26-1007-3845-4	OUTLET, Power, Panel Components #83011060	1
26	78-8123-1294-6	CORD PE ASSEMBLY, Power Inlet (US)	1
28	26-1014-8140-1	COVER, Socket, Hubbel #WP1	2
29	26-1014-8139-3	SOCKET, Hubbel #WP1	1
30	26-1014-9623-5	CONNECTOR, Female, Cable, 3+PE, Contacts, Amphenol #T3109001	1
31	26-1014-8746-5	SCREW, Machine, Pan Hd. Phil., M4 x 16 mm Lg	8
34	26-1014-8891-9	SCREW, Machine, Flat Hd. Phil., M3 x 6 mm Lg	2

This page intentionally left blank.

A PLC Addendum

A.1 MicroLogix 1000 Programmable Controller Description

The Allen-Bradley MicroLogix™ 1000 Programmable Controller contained in the 3M-Matic™ PS2000 Print and Seal Applicator is a programmable logic controller (PLC). A PLC processes input signals from input devices (such as pushbuttons and proximity sensors) and produces output signals that control output devices (such as motors and indicator lights).

In the PS2000 applicator, the Allen-Bradley MicroLogix 1000 PLC controls the pre-strip motor and print engine to ensure that all label printing operations are coordinated with box length.

Hardware – the electronic modules and components of the controller, with the most important being the controller's processor, a power supply, and a fixed number of I/O signals contained in a single package, which controls all processes.

Software – the programs in which controller logic operations and related operations of components within the machine are precisely specified. Software is stored in the controller memory and can be modified if required.

Sensors – those components which detect the position of a moving part, such as a dancer arm, or the presence of printable tape or printer ribbon and in turn provide a zero-volt or +24-volt signal to the controller. Examples in the PS2000 applicator are the Pre-Strip, Registration, Festoon Depleted, and Low Tape sensors.

A.2 Documentation

To order Allen-Bradley documentation, contact your local Allen-Bradley representative for the most current information.

Allen-Bradley
MicroLogix™ 1000 Programmable Controllers User Manual
Publication 1761-6.3 – December 1997
(or most current)

A.3 MicroLogix 1000 Specifications

The PS2000 applicator uses Allen-Bradley MicroLogix™ 1000 Programmable Controller number 1761-L32BBB. The controller requires a 24-volt DC input and has 32 I/O points.

Table A-1 provides the general specifications for MicroLogix 1000 Programmable Controllers.

Table A-1. MicroLogix 1000 Programmable Controller Specifications

Description:		Specification: 1761-L								
		16AWA	16BWA	32AWA	32BWA	32AAA	16BBB	16BWB	32BBB	32BWB
Memory Size and Type		1K EEPROM (approximately 737 instruction words: 437 data words)								
Power Supply Voltage		85–264V ac					20.4–26.4V dc			
Power Supply Usage	120V ac	12 VA	19 VA	16 VA	24 VA	16 VA	Not Applicable			
	240V ac	18 VA	26 VA	22 VA	30 VA	22 VA				
	24V dc	Not Applicable					5 VA	5 VA	7 VA	7 VA
Power Supply Maximum Inrush Current		20A @ .003 seconds (typical)					50A @ .001 seconds			
24V dc Sensor Power (V dc at mA)		Not Applicable	200 mA	Not Applicable	200 mA	Not Applicable				
Max Capacitive Load (User 24V dc)		Not Applicable	200 µF	Not Applicable	200 µF					
Power Cycles		50,000 minimum								
Operating Temperature		0° C to 55° C (32° F to 131° F)								
Storage Temperature		–40° C to 85° C (–40° F to 185° F)								
Operating Humidity		5 to 95% noncondensing								
Vibration		Operating: 5 Hz to 2k Hz, 0.381 mm (0.015 in.) peak to peak/2.5g panel mounted,① 1hr per axis								
		Non-operating: 5 Hz to 2k Hz, 0.762 mm (0.030 in.) peak to peak/5g, 1hr per axis								
Shock		Operating: 10g peak acceleration (7.5g DIN rail mounted)② (11±1 ms duration) 3 times each direction, each axis								
		Non-operating: 20g peak acceleration (11±1 ms duration), 3 times each direction, each axis								
Agency Certification (when product or packaging is marked)		•CSA certified •UL listed •CE marked for all applicable directives								
Terminal Screw Torque		0.9 N-m maximum (8.0 in.-lbs)								
Electrostatic Discharge		IEC801-2 @ 8K V								
Radiated Susceptibility		IEC801-3 @ 10 V/m, 27 MHz – 1000 MHz except for 3V/m, 87 MHz – 108 MHz, 174 MHz – 230 MHz, and 470 MHz – 790 MHz								
Fast Transient		IEC801-4 @ 2K V Power Supply, 1K V I/O								
Isolation		1500V ac								

① DIN rail mounted controller is 1g.
② Relays are derated an additional 2.5g on 32 pt. controllers.

PK-72H

A.4 PLC Programming

Because the PS2000 applicator is a standalone machine, additional PLC programming is not required.

⚠ Warning

If PLC re-programming is needed, great care must be exercised to prevent the creation of a dangerous condition. The standard program is complex and contains many interrelated sequences. 3M does not support unauthorized on-site program changes.

If all safety aspects have been considered, a competent programmer can accomplish programming in one of two ways: first, by using a computer interface and manufacturer's software; and second, by using a hand-held programming terminal.

A ladder logic diagram is included later in this addendum.

A.5 PLC Troubleshooting

To receive the maximum benefit of this troubleshooting section, we recommend you follow these steps:

1. Match you processor LEDs with the status LEDs located in the first column in the tables on the following pages.
2. Once the status LEDs are matched to the appropriate table, simply move across the table identifying the error description and probable causes.
3. Follow the recommended action steps for each probable cause until the cause is identified.

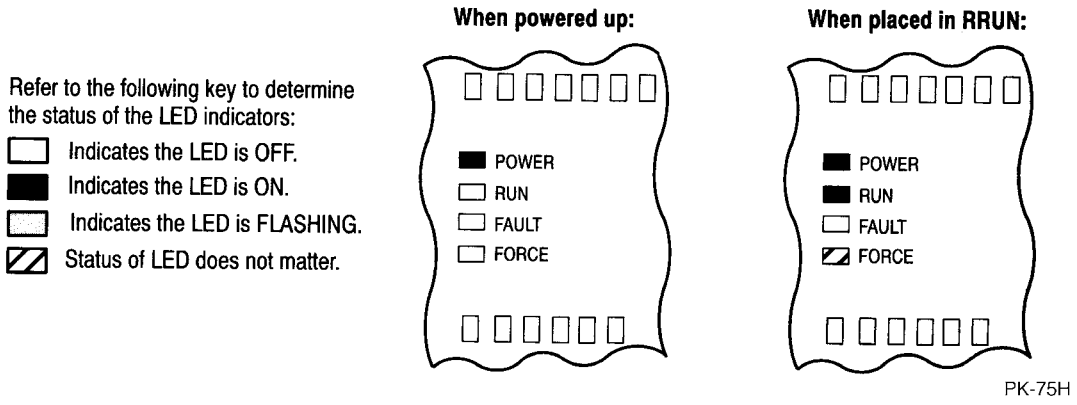
Understanding the Controller LED Status

Between the time you apply power to the controller and the time it has to establish communication with a connected programming device, the only form of communication between you and the controller is through the LEDs.

When Operating Normally

When power is applied, only the power LED turns on and remains on. This is part of the normal power-up sequence.

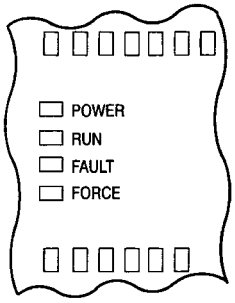
When the controller is placed in REM Run mode, the run LED also turns on and remains on, as shown on the right in the figure below. If a force exists, the force LED is on as well.



When an Error Exists

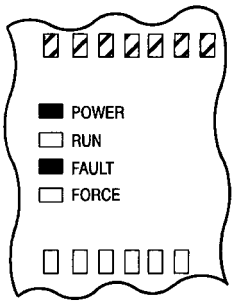
If an error exists within the controller, the controller LEDs operate as described in the following tables.

If the LEDs indicate:



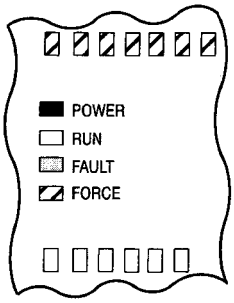
The Following Error Exists	Probable Cause	Recommended Action
No input power or power supply error	No Line Power	Verify proper line voltage and connections to the controller.
	Power Supply Overloaded	This problem can occur intermittently if power supply is overloaded when output loading and temperature varies.

If the LEDs indicate:



The Following Error Exists	Probable Cause	Recommended Action
Hardware faulted	Processor Memory Error	Cycle power. Contact your local Allen-Bradley representative if the error persists.
	Loose Wiring	Verify connections to the controller.

If the LEDs indicate:



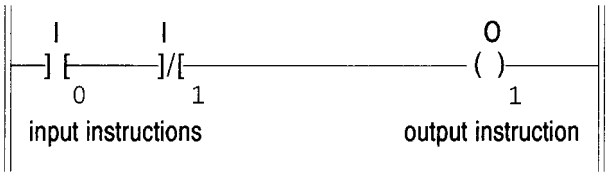
The Following Error Exists	Probable Cause	Recommended Action
Application fault	Hardware/Software Major Fault Detected	1. Monitor Status File Word S:6 for major error code. 2. Remove hardware/software condition causing fault. 3. Press F10 to clear the fault. 4. Attempt a controller REM Run mode entry. If unsuccessful, repeat recommended action steps above or contact your local Allen-Bradley distributor.

PK-76H

A.6 Ladder Logic

The logic you enter into the micro controller makes up a ladder program. A ladder program consists of a set of instructions used to control a machine or process.

Ladder logic is a graphical programming language based on electrical relay diagrams. Instead of having electrical rung continuity, ladder logic is looking for logical rung continuity. A ladder diagram identifies each of the elements in an electromechanical circuit and represents them graphically. This allows you to see how your control circuit operates before you actually start the physical operation of your system.

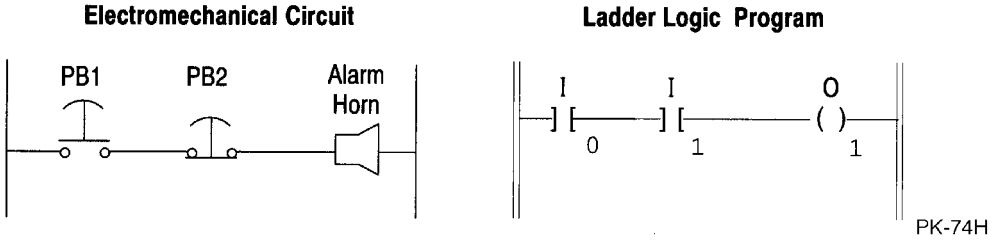


PK-73H

In a ladder diagram, each of the input devices is represented in series or parallel combinations across the rung of the ladder. The last element on the rung is the output that receives the action as a result of the conditional state of the inputs on the rung.

Each output instruction is executed by the controller when the rung is scanned and the conditions on the rung are true. When the rung is not scanned or the logic conditions on the rung do not create a true logic path, the output is not executed.

In the following illustration, the electromechanical circuit shows PB1 and PB2, two pushbuttons, wired in series with an alarm horn. PB1 is a normally-open pushbutton, and PB2 is a normally-closed pushbutton. This same circuit is shown in ladder logic by two contacts wired in series with an output.



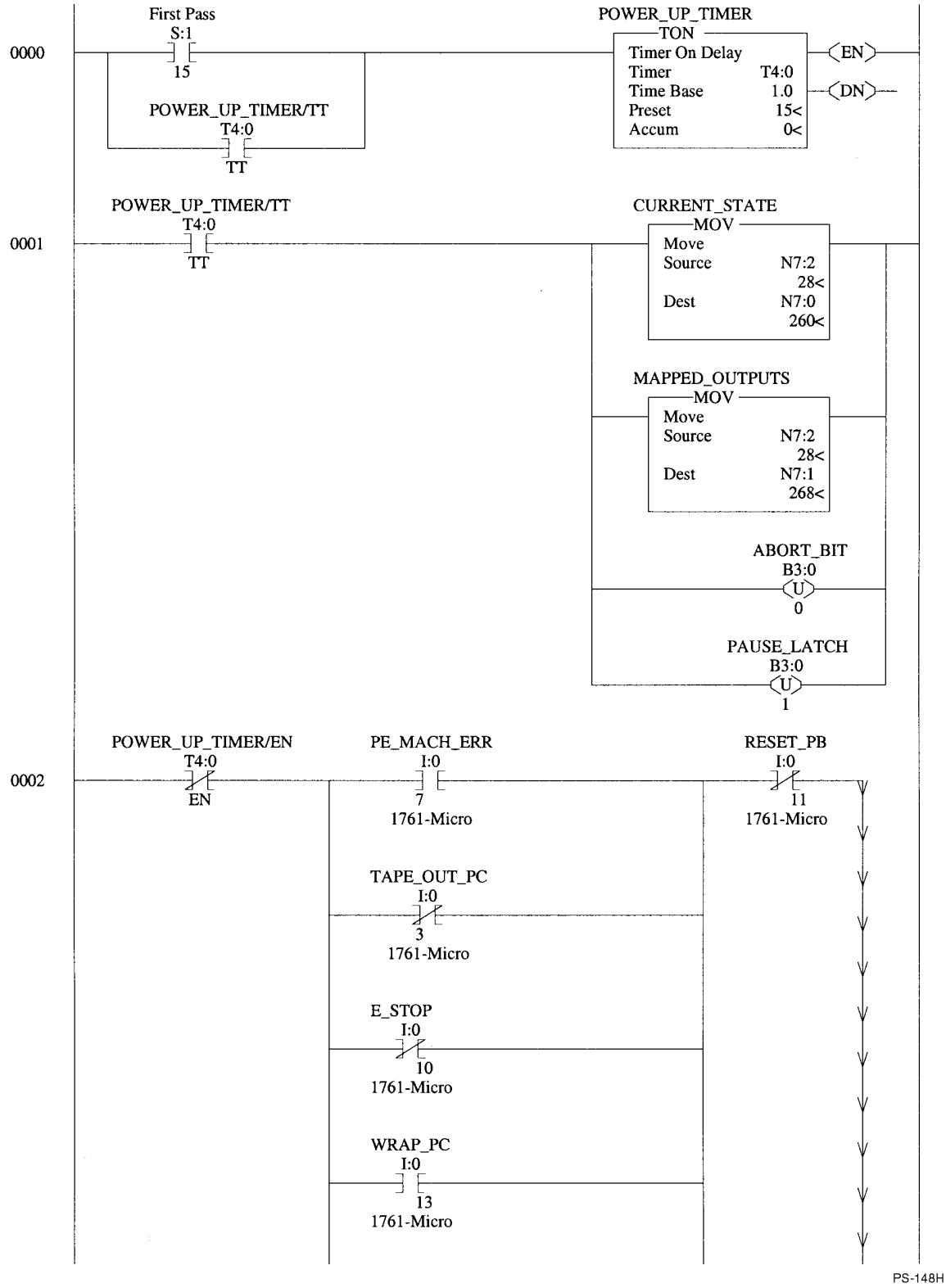
PK-74H

The table below shows how the circuits operate. The table shows all possible conditions for the electromechanical circuit, the equivalent state of the ladder logic instructions, and the resulting output state.

If PB1 is:	I/0 state is:	And PB2 is:	I/1 state is:	Then the Alarm Horn (O/1) is:
not pushed	0	not pushed	1	silent
not pushed	0	pushed	0	silent
pushed	1	not pushed	1	alarm
pushed	1	pushed	0	silent

PS2000 Type (T1V1, T1V3) Ladder Logic

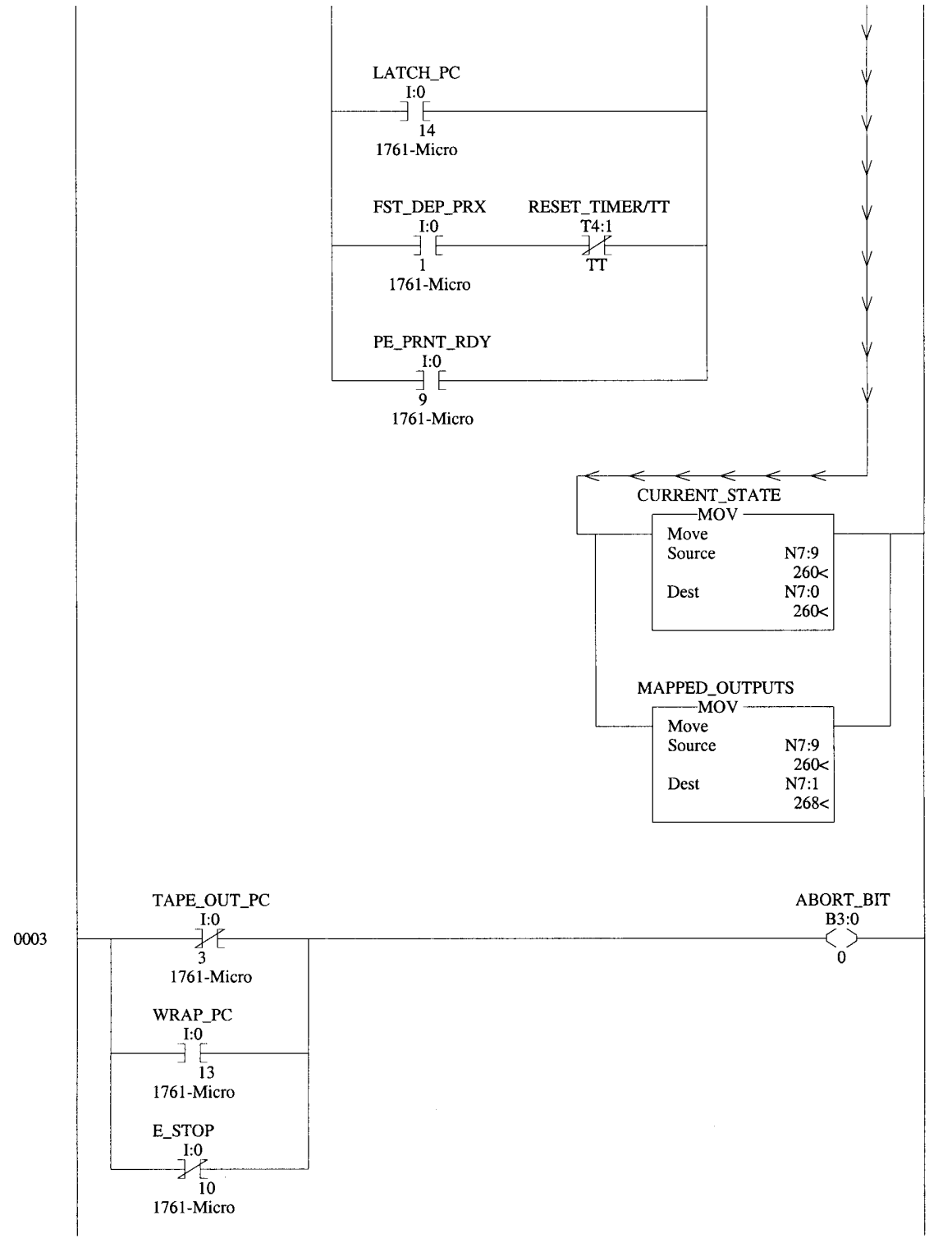
```
LAD 2 - MAIN_PROG --- Total Rungs in File = 41
```



PS-148H

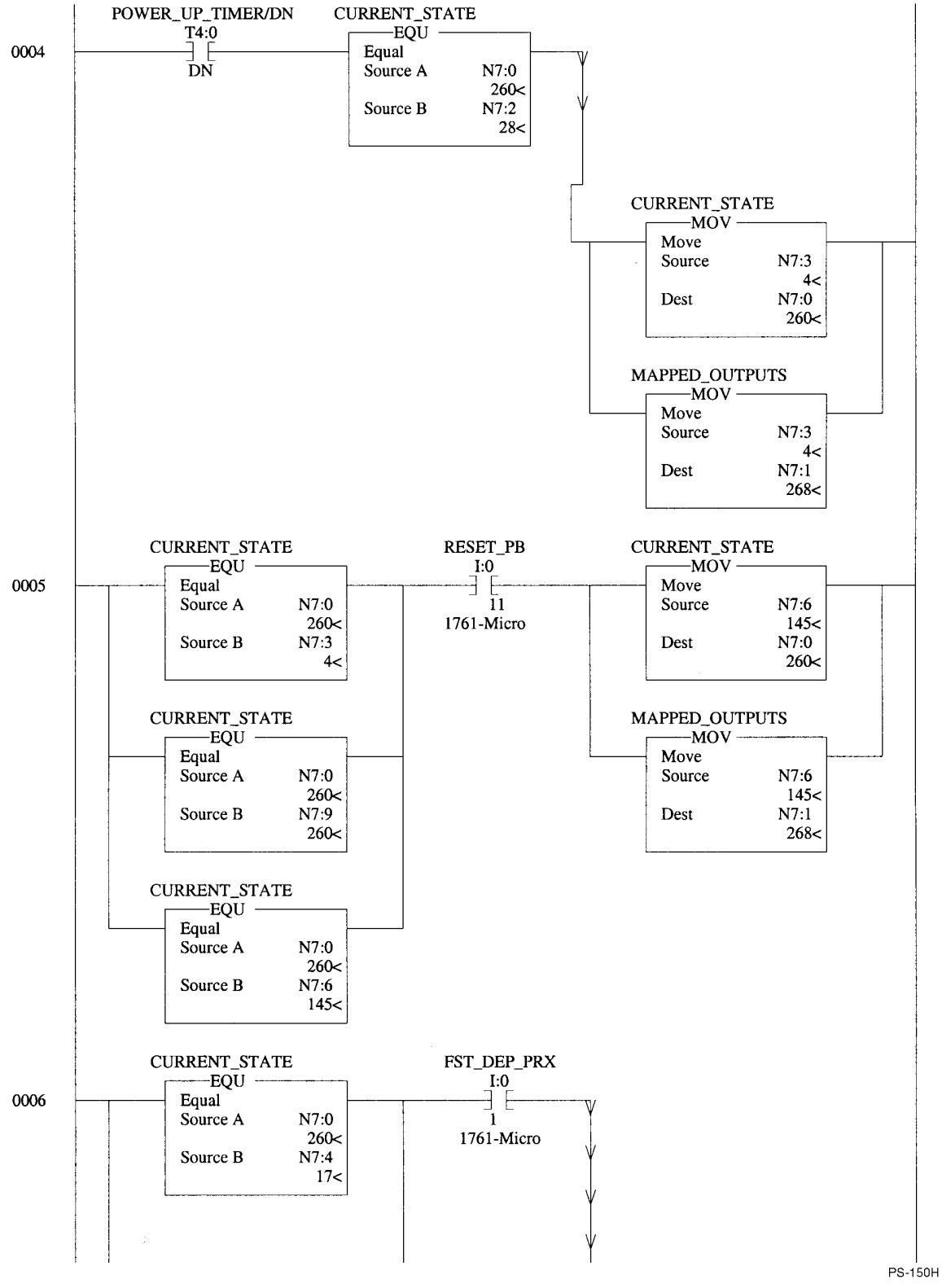
PS2000 Type (T1V1, T1V3) Ladder Logic

LAD 2 - MAIN_PROG --- Total Rungs in File = 41



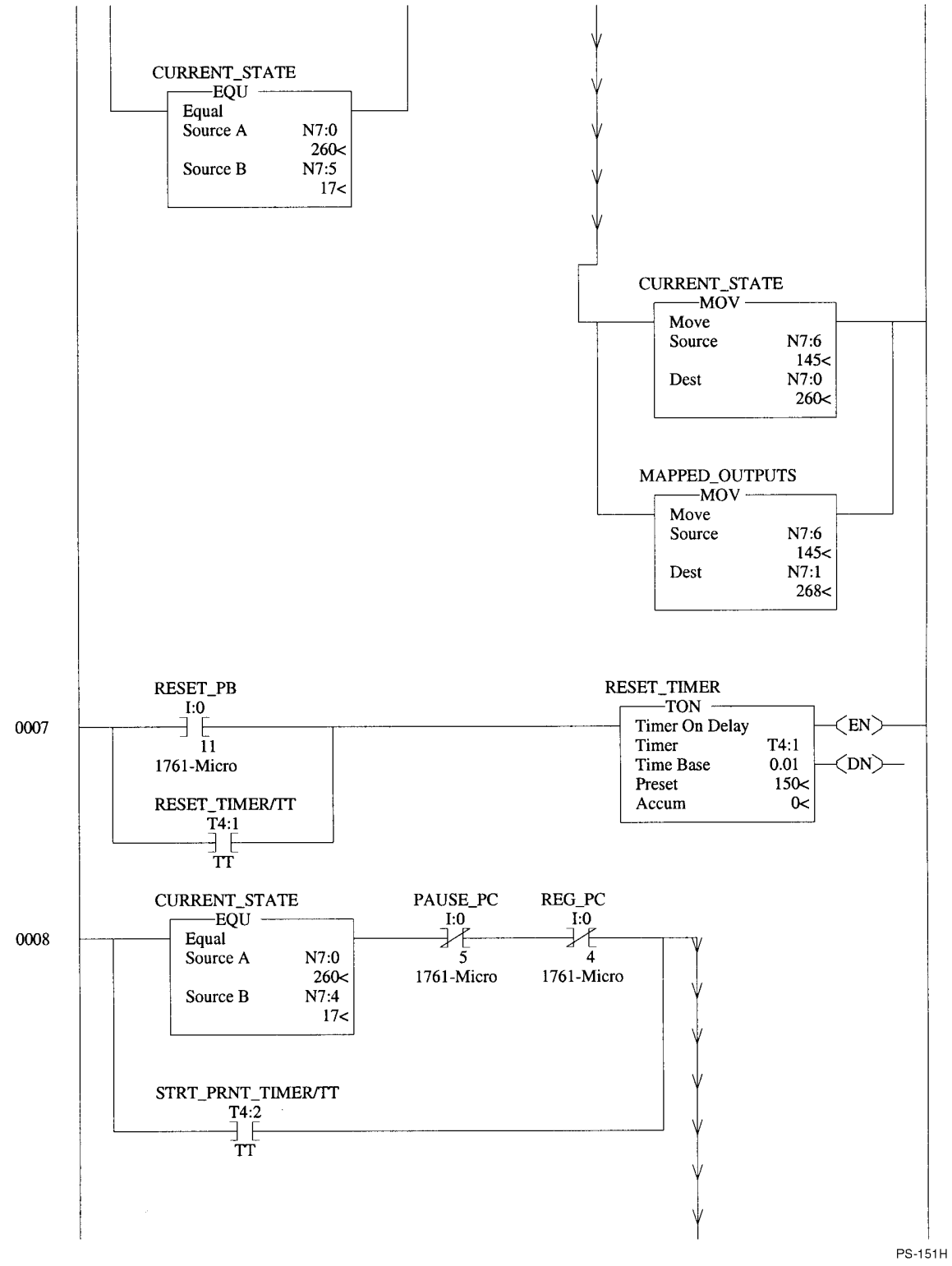
PS2000 Type (T1V1, T1V3) Ladder Logic

LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS2000 Type (T1V1, T1V3) Ladder Logic

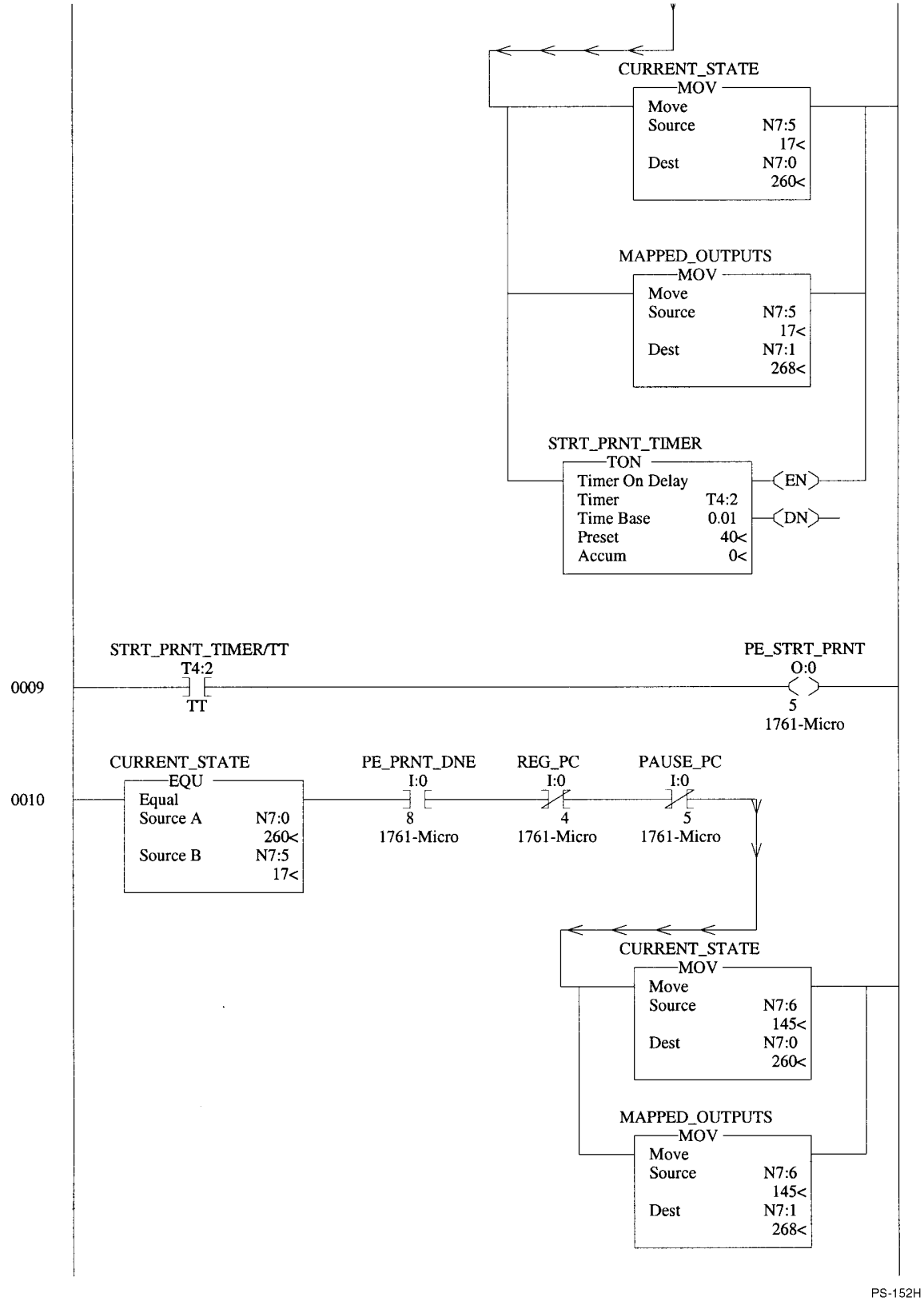
LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS-151H

PS2000 Type (T1V1, T1V3) Ladder Logic

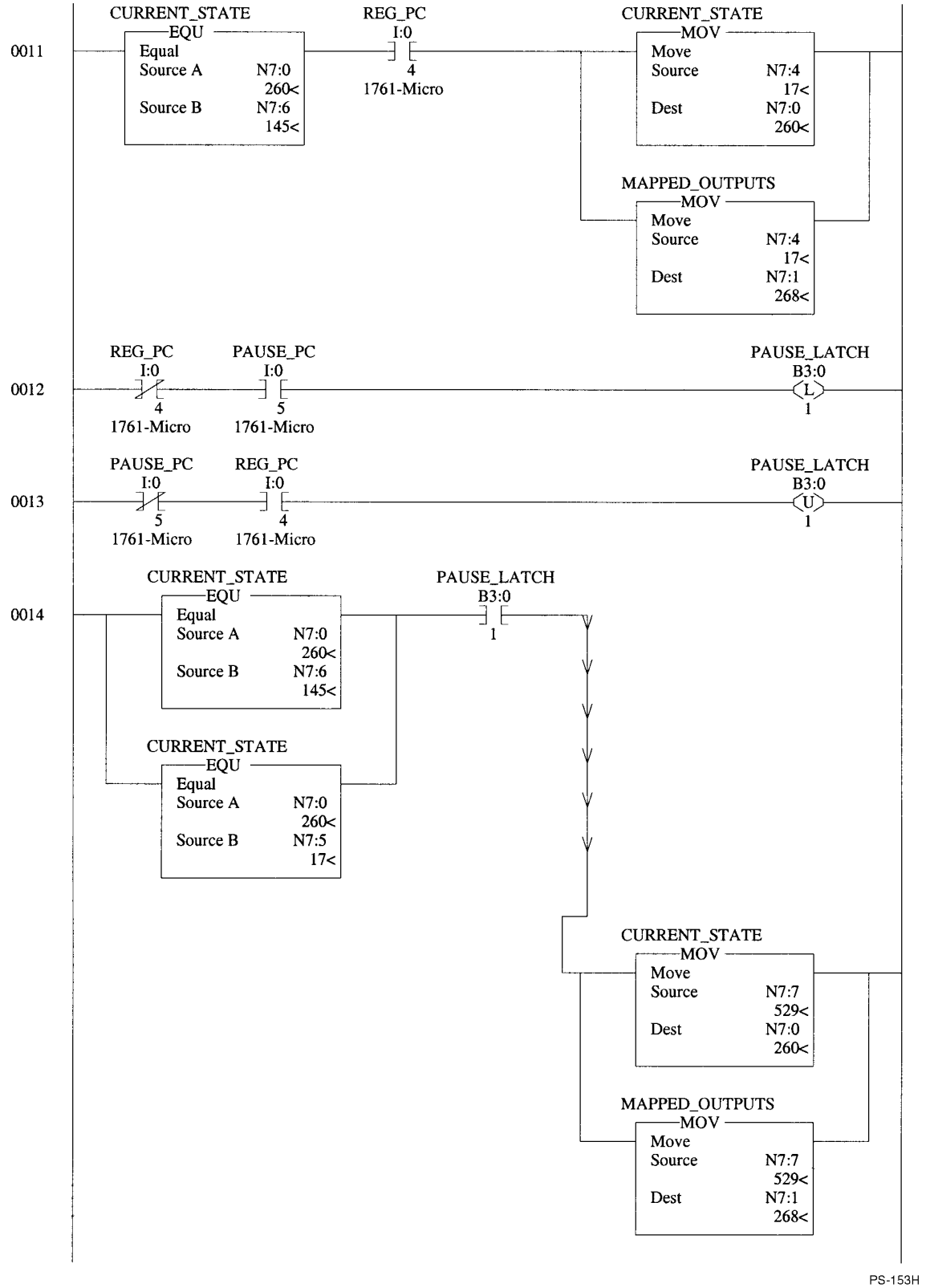
LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS-152H

PS2000 Type (T1V1, T1V3) Ladder Logic

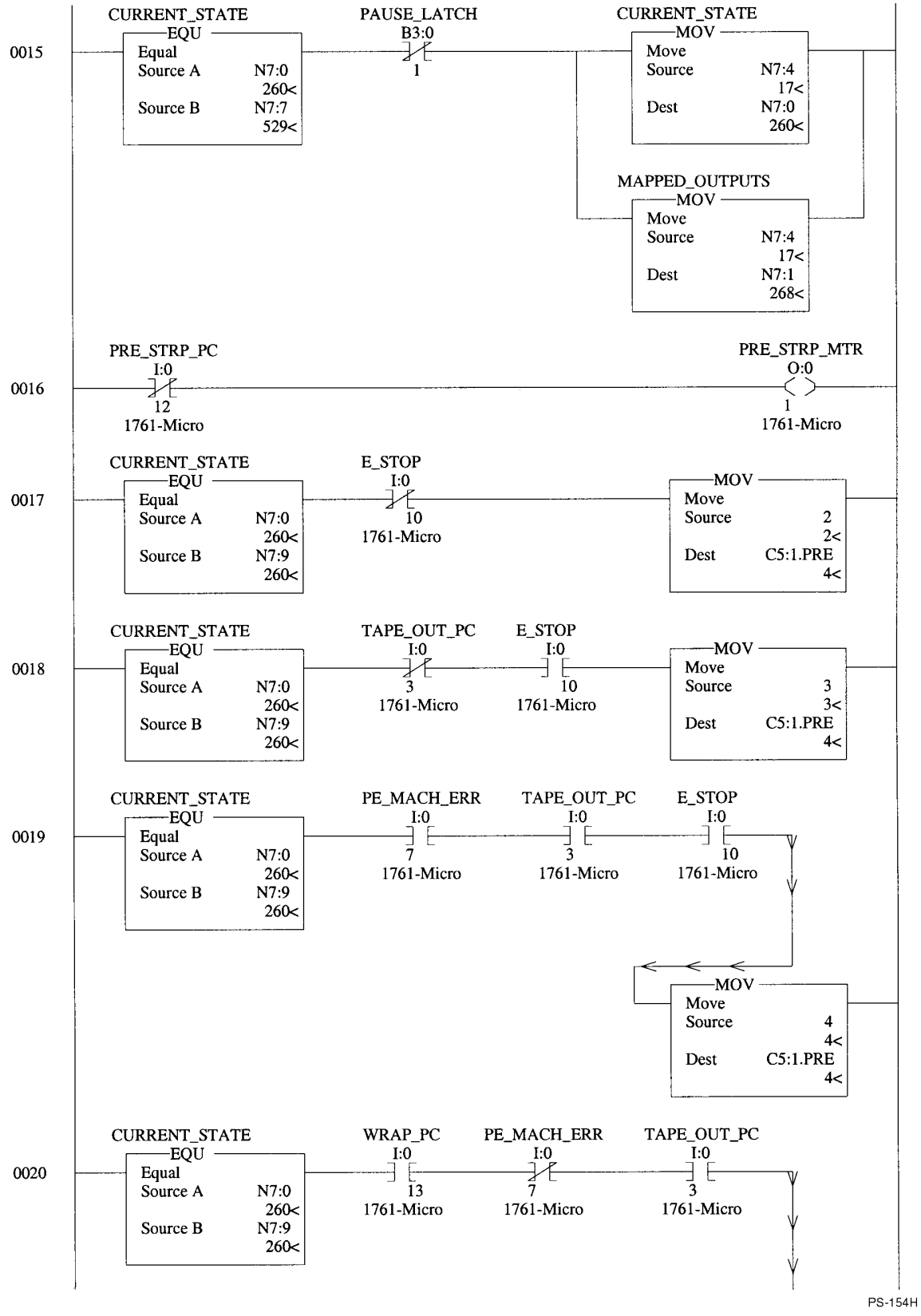
LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS-153H

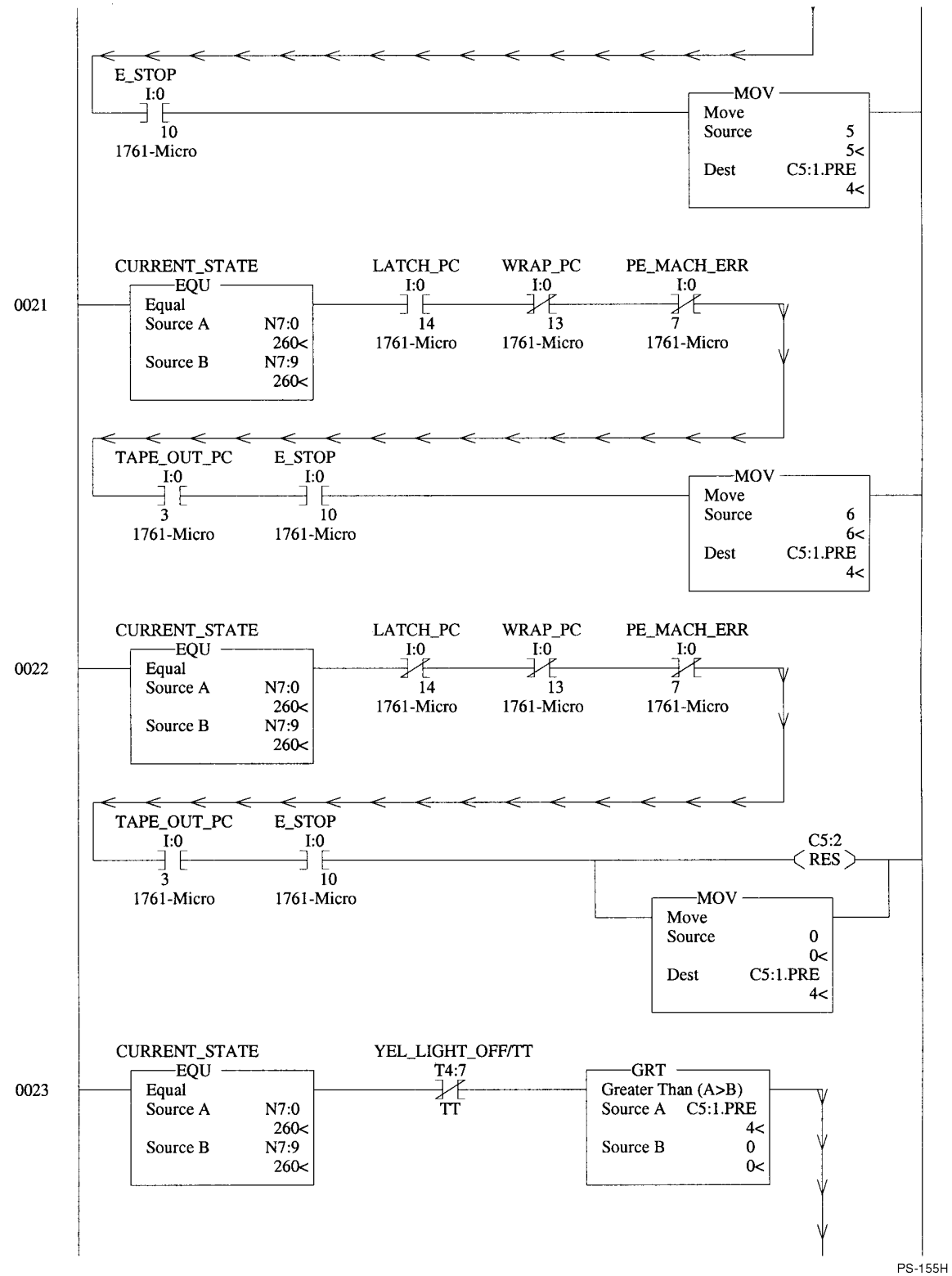
PS2000 Type (T1V1, T1V3) Ladder Logic

LAD 2 - MAIN_PROG --- Total Rungs in File = 41



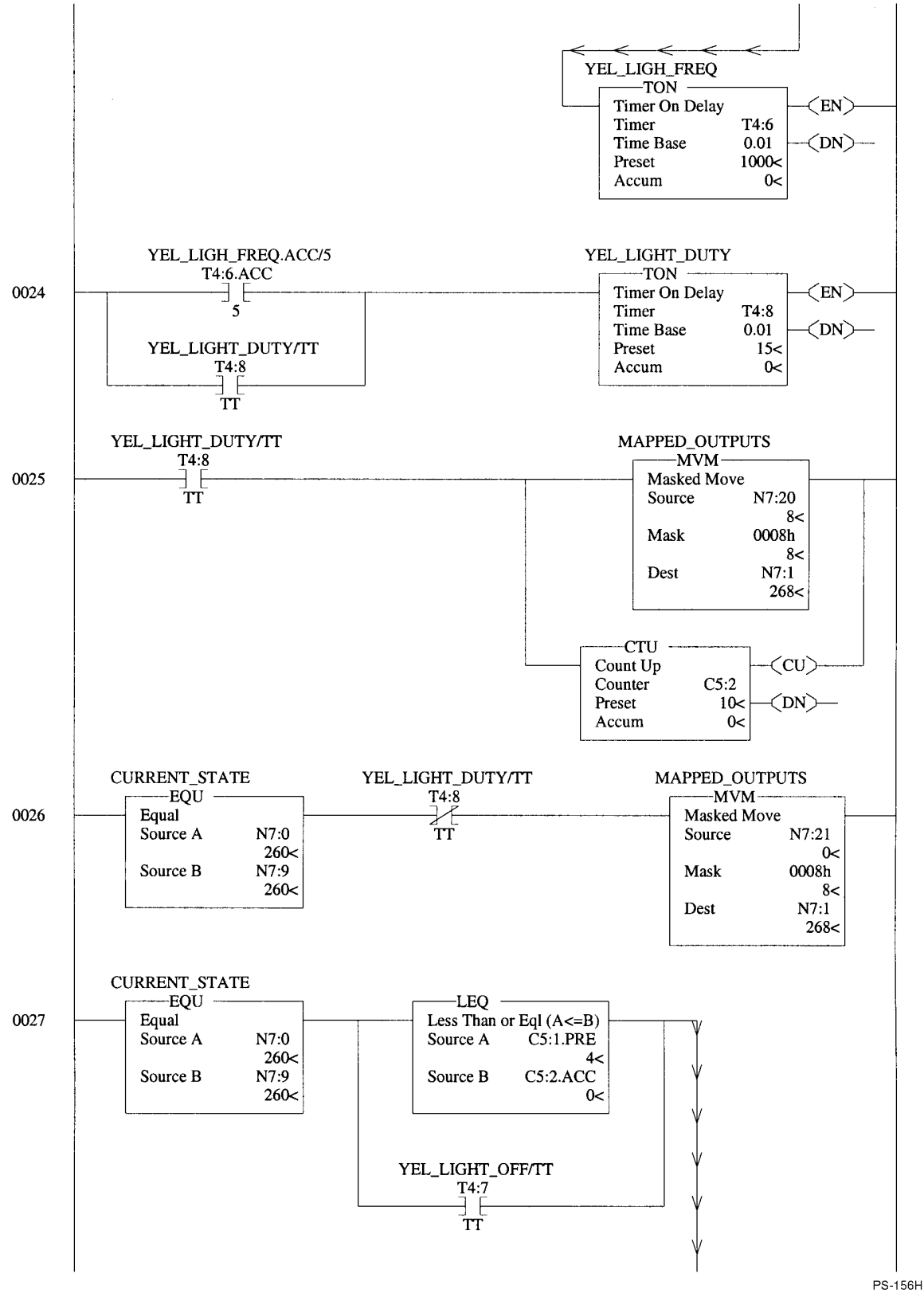
PS2000 Type (T1V1, T1V3) Ladder Logic

LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS2000 Type (T1V1, T1V3) Ladder Logic

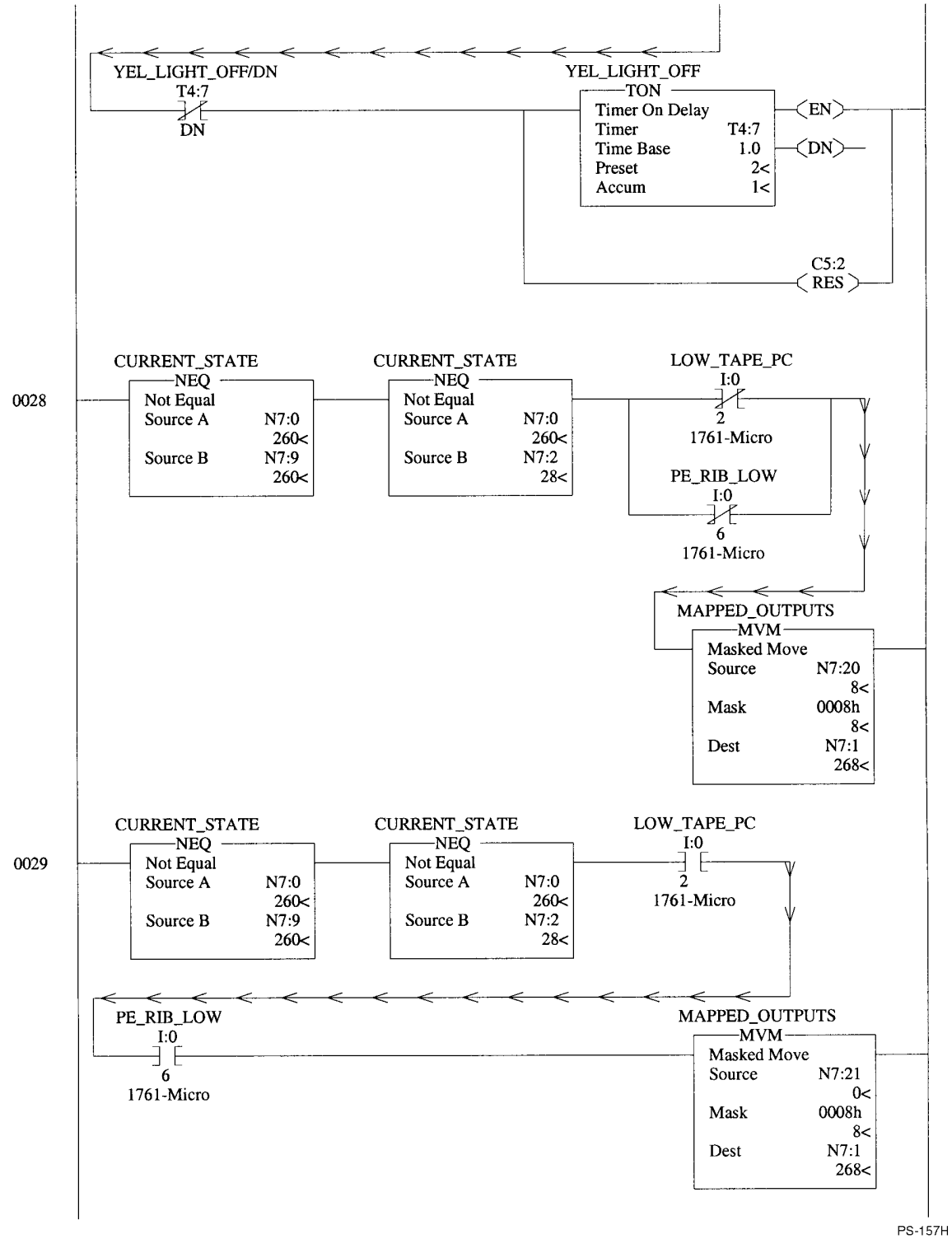
LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS-156H

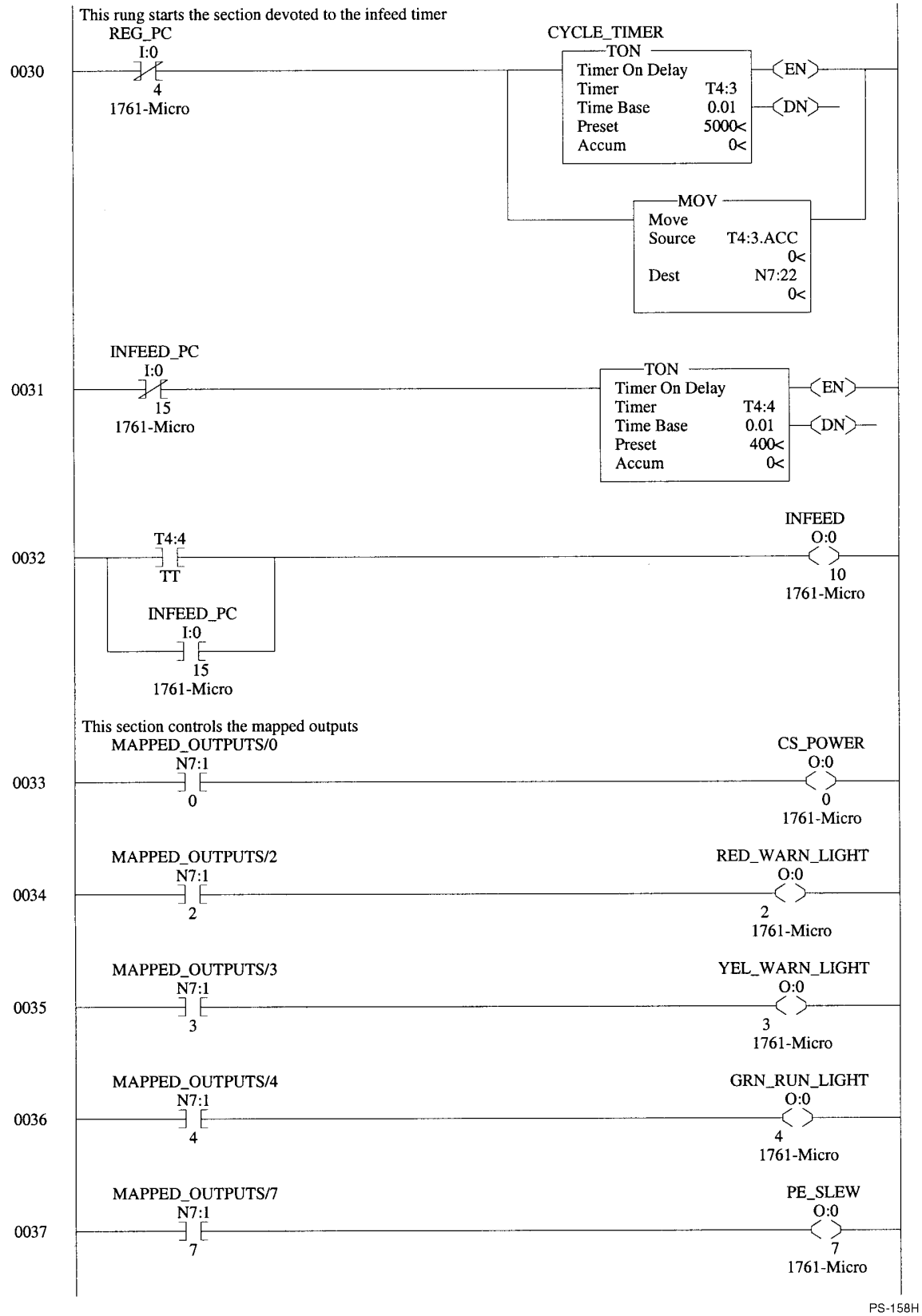
PS2000 Type (T1V1, T1V3) Ladder Logic

LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS2000 Type (T1V1,T1V3) Ladder Logic

LAD 2 - MAIN_PROG --- Total Rungs in File = 41



PS-158H

PS2000 Type (T1V1, T1V3) Ladder Logic

```
LAD 2 - MAIN_PROG --- Total Rungs in File = 41
```

PS-159H

A.7 Address/Symbol Database

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Gr
	XIC	Global		
	FEST_DEP_PRX	Global		
	FST_DEP	Global		
B3:0/0	ABORT_BIT	Global		
B3:0/1	PAUSE_LATCH	Global		
B3:1/1	START_RELAY	Global		
I:0/0	ABORT_PRX	Global		
I:0/1	FST_DEP_PRX	Global		
I:0/2	LOW_TAPE_PC	Global		
I:0/3	TAPE_OUT_PC	Global		
I:0/4	REG_PC	Global		
I:0/5	PAUSE_PC	Global		
I:0/6	PE_RIB_LOW	Global		
I:0/7	PE_MACH_ERR	Global		
I:0/8	PE_PRNT_DNE	Global		
I:0/9	PE_PRNT_RDY	Global		
I:0/10	E_STOP	Global		
I:0/11	RESET_PB	Global		
I:0/12	PRE_STRP_PC	Global		
I:0/13	WRAP_PC	Global		
I:0/14	LATCH_PC	Global		
I:0/15	INFEED_PC	Global		
N7:0	CURRENT_STATE	Global		
N7:1	MAPPED_OUTPUTS	Global		
N7:2	POWER_UP	Global		
N7:3	PRE_RESET	Global		
N7:4	START	Global		
N7:5	START_PRINT	Global		
N7:6	SLEW	Global		
N7:7	PAUSE	Global		
N7:9	ERROR	Global		
N7:10				
N7:20	YEL_LIT_ON	Global		
N7:21	YEL_LIT_OFF	Global		
O:0/0	CS_POWER	Global		
O:0/1	PRE_STRP_MTR	Global		
O:0/2	RED_WARN_LIGHT	Global		
O:0/3	YEL_WARN_LIGHT	Global		
O:0/4	GRN_RUN_LIGHT	Global		
O:0/5	PE_STRT_PRNT	Global		
O:0/7	PE_SLEW	Global		
O:0/8	PE_ABORT	Global		
O:0/9	PE_PAUSE	Global		
O:0/10	INFEED	Global		
S:0			Arithmetic Flags	
S:0/0			Processor Arithmetic Carry Flag	
S:0/1			Processor Arithmetic Underflow/ Overflow Flag	
S:0/2			Processor Arithmetic Zero Flag	
S:0/3			Processor Arithmetic Sign Flag	
S:1			Processor Mode Status/ Control	
S:1/0			Processor Mode Bit 0	
S:1/1			Processor Mode Bit 1	
S:1/2			Processor Mode Bit 2	
S:1/3			Processor Mode Bit 3	
S:1/4			Processor Mode Bit 4	
S:1/5			Forces Enabled	
S:1/6			Forces Present	
S:1/7			Comms Active	
S:1/8			Fault Override at Powerup	
S:1/9			Startup Protection Fault	
S:1/10			Load Memory Module on Memory Error	
S:1/11			Load Memory Module Always	
S:1/12			Load Memory Module and RUN	
S:1/13			Major Error Halted	
S:1/14			Access Denied	
S:1/15			First Pass	
S:2/0			STI Pending	
S:2/1			STI Enabled	
S:2/2			STI Executing	
S:2/3			Index Addressing File Range	

PS-185H

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Gr
S:2/4			Saved with Debug Single Step	
S:2/5			DH-485 Incoming Command Pending	
S:2/6			DH-485 Message Reply Pending	
S:2/7			DH-485 Outgoing Message Command Pending	
S:2/15			Comms Servicing Selection	
S:3			Current Scan Time/ Watchdog Scan Time	
S:4			Time Base	
S:5/0			Overflow Trap	
S:5/2			Control Register Error	
S:5/3			Major Err Detected Executing UserFault Routine	
S:5/4			M0-M1 Referenced on Disabled Slot	
S:5/8			Memory Module Boot	
S:5/9			Memory Module Password Mismatch	
S:5/10			STI Overflow	
S:5/11			Battery Low	
S:6			Major Error Fault Code	
S:7			Suspend Code	
S:8			Suspend File	
S:9			Active Nodes	
S:10			Active Nodes	
S:11			I/O Slot Enables	
S:12			I/O Slot Enables	
S:13			Math Register	
S:14			Math Register	
S:15			Node Address/ Baud Rate	
S:16			Debug Single Step Rung	
S:17			Debug Single Step File	
S:18			Debug Single Step Breakpoint Rung	
S:19			Debug Single Step Breakpoint File	
S:20			Debug Fault/ Powerdown Rung	
S:21			Debug Fault/ Powerdown File	
S:22			Maximum Observed Scan Time	
S:23			Average Scan Time	
S:24			Index Register	
S:25			I/O Interrupt Pending	
S:26			I/O Interrupt Pending	
S:27			I/O Interrupt Enabled	
S:28			I/O Interrupt Enabled	
S:29			User Fault Routine File Number	
S:30			STI Setpoint	
S:31			STI File Number	
S:32			I/O Interrupt Executing	
S:33			Extended Proc Status Control Word	
S:33/0			Incoming Command Pending	
S:33/1			Message Reply Pending	
S:33/2			Outgoing Message Command Pending	
S:33/3			Selection Status User/DF1	
S:33/4			Communicat Active	
S:33/5			Communicat Servicing Selection	
S:33/6			Message Servicing Selection Channel 0	
S:33/7			Message Servicing Selection Channel 1	
S:33/8			Interrupt Latency Control Flag	
S:33/9			Scan Toggle Flag	
S:33/10			Discrete Input Interrupt Reconfigur Flag	
S:33/11			Online Edit Status	
S:33/12			Online Edit Status	
S:33/13			Scan Time Timebase Selection	
S:33/14			DTR Control Bit	
S:33/15			DTR Force Bit	
S:34			Pass-thru Disabled	
S:34/0			Pass-Thru Disabled Flag	
S:34/1			DH+ Active Node Table Enable Flag	
S:34/2			Floating Point Math Flag	
S:35			Last 1 ms Scan Time	
S:36			Extended Minor Error Bits	
S:36/8			Dll Lost	
S:36/9			STI Lost	
S:36/10			Memory Module Data File Overwrite Protection	
S:37			Clock Calendar Year	
S:38			Clock Calendar Month	
S:39			Clock Calendar Day	
S:40			Clock Calendar Hours	
S:41			Clock Calendar Minutes	
S:42			Clock Calendar Seconds	
S:43			STI Interrupt Time	

PS-186H

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Gr
S:44			I/O Event Interrupt Time	
S:45			Dll Interrupt Time	
S:46			Discrete Input Interrupt- File Number	
S:47			Discrete Input Interrupt- Slot Number	
S:48			Discrete Input Interrupt- Bit Mask	
S:49			Discrete Input Interrupt- Compare Value	
S:50			Processor Catalog Interrupt- Preset	
S:51			Discrete Input Interrupt- Return Number	
S:52			Discrete Input Interrupt- Accumulat	
S:53			Discrete Input Interrupt- Timer	
S:54			Discrete Input Interrupt- Timer	
S:55			Last Dll Scan Time	
S:56			Maximum Observed Dll Scan Time	
S:57			Operating System Catalog Number	
S:58			Operating System Series	
S:59			Operating System FRN	
S:61			Processor Series	
S:62			Processor Revision	
S:63			User Program Type	
S:64			User Program Functional Index	
S:65			User RAM Size	
S:66			Flash EEPROM Size	
S:67			Channel 0 Active Nodes	
S:68			Channel 0 Active Nodes	
S:69			Channel 0 Active Nodes	
S:70			Channel 0 Active Nodes	
S:71			Channel 0 Active Nodes	
S:72			Channel 0 Active Nodes	
S:73			Channel 0 Active Nodes	
S:74			Channel 0 Active Nodes	
S:75			Channel 0 Active Nodes	
S:76			Channel 0 Active Nodes	
S:77			Channel 0 Active Nodes	
S:78			Channel 0 Active Nodes	
S:79			Channel 0 Active Nodes	
S:80			Channel 0 Active Nodes	
S:81			Channel 0 Active Nodes	
S:82			Channel 0 Active Nodes	
S:83			DH+ Active Nodes	
S:84			DH+ Active Nodes	
S:85			DH+ Active Nodes	
S:86			DH+ Active Nodes	
T4:0	POWER_UP_TIMER	Global		
T4:1	RESET_TIMER	Global		
T4:2	STRT_PRNT_TIMER	Global		
T4:3	CYCLE_TIMER	Global		
T4:5	INACTIVITY_TIMER	Global		
T4:6	YEL_LIGH_FREQ	Global		
T4:7	YEL_LIGHT_OFF	Global		
T4:8	YEL_LIGHT_DUTY	Global		

A.8 Integer Data File N7

The table below is a partial map of the integer data file N7 stored in PLC memory while the PLC is running. Use this table in conjunction with the ladder logic to determine which outputs are ON (1) or OFF (0) when any portion of the integer data file (N7:0 – N7:21) is moved to the mapped outputs (N7:1).

	Print Engine Pause (N7:1/9)	Print Engine Slew (N7:1/7)	Green Run Light (N7:1/4)	Yellow Warning Light (N7:1/3)	Red Warning Light (N7:1/2)	Case Sealer Power (N7:1/0)
Current State (N7:0)	X	X	X	X	X	X
Mapped Outputs (N7:1)	X	X	X	X	X	X
Power Up (N7:2)	0	0	1	1	1	0
Pre Reset (N7:3)	0	0	0	0	1	0
Start (N7:4)	0	0	1	0	0	1
Start Print (N7:5)	0	0	1	0	0	1
Slew (N7:6)	0	1	1	0	0	1
Pause (N7:7)	1	0	1	0	0	1
Error (N7:9)	0	0	0	0	1	0
Yellow Light On (N7:20)	0	0	0	1	0	0
Yellow Light Off (N7:21)	0	0	0	0	0	0

Data File N7 (bin) -- INTEGER

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N7:0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
N7:1	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0
N7:2	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
N7:3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
N7:4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
N7:5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
N7:6	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1
N7:7	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1
N7:8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:9	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
N7:10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:20	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
N7:21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PS-183H

Data File N7 (bin) -- INTEGER

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
N7:62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N7:104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0